

10/586978

SEQUENCE LISTING

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<110> Kohonen-Corish, Maija
 <120> Methods of diagnosing colorectal cancer and reagents therefor
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 <150> AU 2004900340
 <151> 2004-01-23
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Leu Tyr Tyr Asn Thr Ile Thr Asn Phe Ser Glu Lys Asp Arg Pro Glu			
	270	275	280
aat gtc cat gga gga att tta gct gat gat atg ggt ttg ggt aaa act			1215
Asn Val His Gly Gly Ile Leu Ala Asp Asp Met Gly Leu Gly Lys Thr			
	290	295	300
ctt acg gcc att gca gta atc ctt acc aac ttc cat gat ggc aga cct			1263
Leu Thr Ala Ile Ala Val Ile Leu Thr Asn Phe His Asp Gly Arg Pro			
	305	310	315
ctt cct att gaa aga gtt aaa aag aat cta ctg aag aag gaa tat aat			1311
Leu Pro Ile Glu Arg Val Lys Lys Asn Leu Leu Lys Lys Glu Tyr Asn			
	320	325	330
gtt aac gat ggc tct atg aaa ctt gga gga aac aat acc agt gaa aag			1359
Val Asn Asp Gly Ser Met Lys Leu Gly Gly Asn Asn Thr Ser Glu Lys			
	335	340	345
gca gat gga cta agc aaa gac gca tct aga tgt agt gaa caa ccc agt			1407
Ala Asp Gly Leu Ser Lys Asp Ala Ser Arg Cys Ser Glu Gln Pro Ser			
	350	355	360
att tca gat atc aag gag aag agt aag ttt cgc atg tca gaa ttg tct			1455
Ile Ser Asp Ile Lys Glu Lys Ser Lys Phe Arg Met Ser Glu Leu Ser			
	370	375	380
agc tcc cgc ccc aaa aga aga aaa act gct gtc cag tac ata gaa agc			1503
Ser Ser Arg Pro Lys Arg Arg Lys Thr Ala Val Gln Tyr Ile Glu Ser			
	385	390	395
agt gat tca gag gaa att gaa aca agt gaa ttg ccg cag aaa atg aaa			1551
Ser Asp Ser Glu Glu Ile Glu Thr Ser Glu Leu Pro Gln Lys Met Lys			
	400	405	410
ggc aaa ctg aaa aat gta cag tct gaa act aaa ggc agg gcg aaa gca			1599
Gly Lys Leu Lys Asn Val Gln Ser Glu Thr Lys Gly Arg Ala Lys Ala			
	415	420	425

gga tct tct aag gtt ata gaa gat gtg gca ttt gca tgt gca tta act	1647
Gly Ser Ser Lys Val Ile Glu Asp Val Ala Phe Ala Cys Ala Leu Thr	
430 435 440 445	
tca tct gtt cct aca aca aaa aag aaa atg ttg aaa aag gga gct tgt	1695
Ser Ser Val Pro Thr Thr Lys Lys Lys Met Leu Lys Lys Gly Ala Cys	
450 455 460	
gca gtg gag ggg tca aag aaa act gat gtt gag gag aga cca aga aca	1743
Ala Val Glu Gly Ser Lys Lys Thr Asp Val Glu Glu Arg Pro Arg Thr	
465 470 475	
aca ctg atc atc tgt ccg ctt tct gtg tta agc aac tgg att gac cag	1791
Thr Leu Ile Ile Cys Pro Leu Ser Val Leu Ser Asn Trp Ile Asp Gln	
480 485 490	
ttt gga caa cat ata aaa tca gat gta cac ttg aat ttt tat gtt tat	1839
Phe Gly Gln His Ile Lys Ser Asp Val His Leu Asn Phe Tyr Val Tyr	
495 500 505	
tat ggt cct gat cgt att aga gaa ccg gcc tta ctt tca aaa cag gat	1887
Tyr Gly Pro Asp Arg Ile Arg Glu Pro Ala Leu Leu Ser Lys Gln Asp	
510 515 520 525	
att gtt ttg act acg tat aat att tta act cat gac tat gga act aaa	1935
Ile Val Leu Thr Thr Tyr Asn Ile Leu Thr His Asp Tyr Gly Thr Lys	
530 535 540	
gga gat agt cca tta cat agc ata agg tgg cta aga gtg atc ctg gat	1983
Gly Asp Ser Pro Leu His Ser Ile Arg Trp Leu Arg Val Ile Leu Asp	
545 550 555	
gaa gga cat gcc ata cga aat cca aat gct cag cag aca aaa gct gta	2031
Glu Gly His Ala Ile Arg Asn Pro Asn Ala Gln Gln Thr Lys Ala Val	
560 565 570	
ctt gac tta gaa tca gaa aga aga tgg gtt ttg aca ggt act cca atc	2079
Leu Asp Leu Glu Ser Glu Arg Arg Trp Val Leu Thr Gly Thr Pro Ile	
575 580 585	
cag aat tct tta aag gac ttg tgg tct ctt ctt tcc ttt tta aaa ctt	2127
Gln Asn Ser Leu Lys Asp Leu Trp Ser Leu Leu Ser Phe Leu Lys Leu	
590 595 600 605	
aaa cca ttt att gat aga gaa tgg tgg cat aga aca ata cag cgt cct	2175
Lys Pro Phe Ile Asp Arg Glu Trp Trp His Arg Thr Ile Gln Arg Pro	
610 615 620	
gtc aca atg gga gat gaa gga gga ctt agg cgt tta cag tcc cta att	2223
Val Thr Met Gly Asp Glu Gly Gly Leu Arg Arg Leu Gln Ser Leu Ile	
625 630 635	
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Lys Asn Ile Thr Leu Arg Arg Thr Lys Thr Ser Lys Ile Lys Gly Lys	
640 645 650	
cct gtt ttg gag tta cca gaa cgt aaa gta ttt att cag cac att aca	2319
Pro Val Leu Glu Leu Pro Glu Arg Lys Val Phe Ile Gln His Ile Thr	
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ctt tca gat gaa gag aga aag att tat cag tct gtg aaa aat gaa ggc Leu Ser Asp Glu Glu Arg Lys Ile Tyr Gln Ser Val Lys Asn Glu Gly 670 675 680 685	2367
aga gcc act att gga agg tat ttt aat gaa ggg act gtc ctg gca cat Arg Ala Thr Ile Gly Arg Tyr Phe Asn Glu Gly Thr Val Leu Ala His 690 695 700	2415
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cat act tac ctt ctt aca aat gca gtg tct tcc aat ggc ccc tca gga His Thr Tyr Leu Leu Thr Asn Ala Val Ser Ser Asn Gly Pro Ser Gly 720 725 730	2511
aat gat aca cct gaa gaa ctg aga aag aag tta ata agg aag atg aag Asn Asp Thr Pro Glu Glu Leu Arg Lys Lys Leu Ile Arg Lys Met Lys 735 740 745	2559
tta att ctg agc tca ggt tca gat gag gaa tgt gca att tgc ctg gat Leu Ile Leu Ser Ser Gly Ser Asp Glu Glu Cys Ala Ile Cys Leu Asp 750 755 760 765	2607
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ccc tgt att tgc caa gtc att cag aat gag cag cca cat gct aaa tgc Pro Cys Ile Cys Gln Val Ile Gln Asn Glu Gln Pro His Ala Lys Cys 785 790 795	2703
cct tta tgc aga aat gat ata cat gaa gat aat tta tta gaa tgt cct Pro Leu Cys Arg Asn Asp Ile His Glu Asp Asn Leu Leu Glu Cys Pro 800 805 810	2751
cca gaa gaa tta gca cgt gac agt gag aaa aag tct gat atg gaa tgg Pro Glu Glu Leu Ala Arg Asp Ser Glu Lys Lys Ser Asp Met Glu Trp 815 820 825	2799
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cga gtg ttt tta atg gat cca gcc tgg aat cct gct gct gaa gat cag	3135
Arg Val Phe Leu Met Asp Pro Ala Trp Asn Pro Ala Ala Glu Asp Gln	
930 935 940	
tgc ttt gac aga tgc cat aga ctt ggt cag aag caa gaa gtt atc atc	3183
Cys Phe Asp Arg Cys His Arg Leu Gly Gln Lys Gln Glu Val Ile Ile	
945 950 955	
aca aaa ttc att gta aag gac tct gtt gaa gaa aat atg ctg aaa ata	3231
Thr Lys Phe Ile Val Lys Asp Ser Val Glu Glu Asn Met Leu Lys Ile	
960 965 970	
caa aac aaa aag aga gaa ctt gca gca gga gcc ttt gga act aaa aaa	3279
Gln Asn Lys Lys Arg Glu Leu Ala Ala Gly Ala Phe Gly Thr Lys Lys	
975 980 985	
cca aat gct gac gaa atg aaa caa gcc aaa att aat gaa atc aga aca	3327
Pro Asn Ala Asp Glu Met Lys Gln Ala Lys Ile Asn Glu Ile Arg Thr	
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Phe Phe Leu Arg Phe Glu Phe Gln Asp Val Ile Pro Pro Asp Asp Phe ...
 35 40 45

Leu Thr Ser Asp Glu Glu Val Asp Ser Val Leu Phe Gly Ser Leu Arg
 50 55 60

Gly His Val Val Gly Leu Arg Tyr Tyr Thr Gly Val Val Asn Asn Asn
 15

65	70	75	80
Glu Met Val Ala Leu Gln Arg Asp Pro Asn Asn Pro Tyr Asp Lys Asn	85	90	95
Ala Ile Lys Val Asn Asn Val Asn Gly Asn Gln Val Gly His Leu Lys	100	105	110
Lys Glu Leu Ala Gly Ala Leu Ala Tyr Ile Met Asp Asn Lys Leu Ala	115	120	125
Gln Ile Glu Gly Val Val Pro Phe Gly Ala Asn Asn Ala Phe Thr Met	130	135	140
Pro Leu His Met Thr Phe Trp Gly Lys Glu Glu Asn Arg Lys Ala Val	145	150	155
Ser Asp Gln Leu Lys Lys His Gly Phe Lys Leu Gly Pro Ala Pro Lys	165	170	175
Thr Leu Gly Phe Asn Leu Glu Ser Gly Trp Gly Ser Gly Arg Ala Gly	180	185	190
Pro Ser Tyr Ser Met Pro Val His Ala Ala Val Gln Met Thr Thr Glu	195	200	205
Gln Leu Lys Thr Glu Phe Asp Lys Leu Phe Glu Asp Leu Lys Glu Asp	210	215	220
Asp Lys Thr His Glu Met Glu Pro Ala Glu Ala Ile Glu Thr Pro Leu	225	230	235
Leu Pro His Gln Lys Gln Ala Leu Ala Trp Met Val Ser Arg Glu Asn	245	250	255
Ser Lys Glu Leu Pro Pro Phe Trp Glu Gln Arg Asn Asp Leu Tyr Tyr	260	265	270
Asn Thr Ile Thr Asn Phe Ser Glu Lys Asp Arg Pro Glu Asn Val His	275	280	285
Gly Gly Ile Leu Ala Asp Asp Met Gly Leu Gly Lys Thr Leu Thr Ala	290	295	300
Ile Ala Val Ile Leu Thr Asn Phe His Asp Gly Arg Pro Leu Pro Ile	305	310	315
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Glu Arg Val Lys Lys Asn Leu Leu Lys Lys Glu Tyr Asn Val Asn Asp
 325 330 335

Gly Ser Met Lys Leu Gly Gly Asn Asn Thr Ser Glu Lys Ala Asp Gly
 340 345 350

Leu Ser Lys Asp Ala Ser Arg Cys Ser Glu Gln Pro Ser Ile Ser Asp
 355 360 365

Ile Lys Glu Lys Ser Lys Phe Arg Met Ser Glu Leu Ser Ser Ser Arg
 370 375 380

Pro Lys Arg Arg Lys Thr Ala Val Gln Tyr Ile Glu Ser Ser Asp Ser
 385 390 395 400

Glu Glu Ile Glu Thr Ser Glu Leu Pro Gln Lys Met Lys Gly Lys Leu
 405 410 415

Lys Asn Val Gln Ser Glu Thr Lys Gly Arg Ala Lys Ala Gly Ser Ser
 420 425 430

Lys Val Ile Glu Asp Val Ala Phe Ala Cys Ala Leu Thr Ser Ser Val
 435 440 445

Pro Thr Thr Lys Lys Lys Met Leu Lys Lys Gly Ala Cys Ala Val Glu
 450 455 460

Gly Ser Lys Lys Thr Asp Val Glu Glu Arg Pro Arg Thr Thr Leu Ile
 465 470 475 480

Ile Cys Pro Leu Ser Val Leu Ser Asn Trp Ile Asp Gln Phe Gly Gln
 485 490 495

His Ile Lys Ser Asp Val His Leu Asn Phe Tyr Val Tyr Tyr Gly Pro
 500 505 510

Asp Arg Ile Arg Glu Pro Ala Leu Leu Ser Lys Gln Asp Ile Val Leu
 515 520 525

Thr Thr Tyr Asn Ile Leu Thr His Asp Tyr Gly Thr Lys Gly Asp Ser
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Pro Leu His Ser Ile Arg Trp Leu Arg Val Ile Leu Asp Glu Gly His
 545 550 555 560

Ala Ile Arg Asn Pro Asn Ala Gln Gln Thr Lys Ala Val Leu Asp Leu
 565 570 575

Glu Ser Glu Arg Arg Trp Val Leu Thr Gly Thr Pro Ile Gln Asn Ser
 580 585 590

Leu Lys Asp Leu Trp Ser Leu Leu Ser Phe Leu Lys Leu Lys Pro Phe
 595 600 605

Ile Asp Arg Glu Trp Trp His Arg Thr Ile Gln Arg Pro Val Thr Met
 610 615 620

Gly Asp Glu Gly Gly Leu Arg Arg Leu Gln Ser Leu Ile Lys Asn Ile
 625 630 635 640

Thr Leu Arg Arg Thr Lys Thr Ser Lys Ile Lys Gly Lys Pro Val Leu
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Glu Leu Pro Glu Arg Lys Val Phe Ile Gln His Ile Thr Leu Ser Asp
 660 665 670

Glu Glu Arg Lys Ile Tyr Gln Ser Val Lys Asn Glu Gly Arg Ala Thr
 675 680 685

Ile Gly Arg Tyr Phe Asn Glu Gly Thr Val Leu Ala His Tyr Ala Asp
 690 695 700

Val Leu Gly Leu Leu Leu Arg Leu Arg Gln Ile Cys Cys His Thr Tyr
 705 710 715 720

Leu Leu Thr Asn Ala Val Ser Ser Asn Gly Pro Ser Gly Asn Asp Thr
 725 730 735

Pro Glu Glu Leu Arg Lys Lys Leu Ile Arg Lys Met Lys Leu Ile Leu
 740 745 750

Ser Ser Gly Ser Asp Glu Glu Cys Ala Ile Cys Leu Asp Ser Leu Thr
 755 760 765

Val Pro Val Ile Thr His Cys Ala His Val Phe Cys Lys Pro Cys Ile
 770 775 780

Cys Gln Val Ile Gln Asn Glu Gln Pro His Ala Lys Cys Pro Leu Cys
 785 790 795 800

Arg Asn Asp Ile His Glu Asp Asn Leu Leu Glu Cys Pro Pro Glu Glu
 805 810 815
 Leu Ala Arg Asp Ser Glu Lys Lys Ser Asp Met Glu Trp Thr Ser Ser
 820 825 830
 Ser Lys Ile Asn Ala Leu Met His Ala Leu Thr Asp Leu Arg Lys Lys
 835 840 845
 Asn Pro Asn Ile Lys Ser Leu Val Val Ser Gln Phe Thr Thr Phe Leu
 850 855 860
 Ser Leu Ile Glu Ile Pro Leu Lys Ala Ser Gly Phe Val Phe Thr Arg
 865 870 875 880
 Leu Asp Gly Ser Met Ala Gln Lys Lys Arg Val Glu Ser Ile Gln Cys
 885 890 895
 Phe Gln Asn Thr Glu Ala Gly Ser Pro Thr Ile Met Leu Leu Ser Leu
 900 905 910
 Arg Ala Gly Gly Val Gly Leu Asn Leu Ser Ala Ala Ser Arg Val Phe
 915 920 925
 Leu Met Asp Pro Ala Trp Asn Pro Ala Ala Glu Asp Gln Cys Phe Asp
 930 935 940
 Arg Cys His Arg Leu Gly Gln Lys Gln Glu Val Ile Ile Thr Lys Phe
 945 950 955 960
 Ile Val Lys Asp Ser Val Glu Glu Asn Met Leu Lys Ile Gln Asn Lys
 965 970 975
 Lys Arg Glu Leu Ala Ala Gly Ala Phe Gly Thr Lys Lys Pro Asn Ala
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 Asp Glu Met Lys Gln Ala Lys Ile Asn Glu Ile Arg Thr Leu Ile Asp
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Leu

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Asn Asn Ala Phe Thr Met Pro Leu His Met Thr Phe Trp Gly Lys Glu
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Glu Asn Arg Lys Ala Val Ser Asp Gln Leu Lys Lys His Gly Phe Lys
35 40 45

Leu Gly Pro Ala Pro Lys Thr Leu Gly Phe Asn Leu Glu Ser Gly Trp
50 55 60

Gly Ser Gly Arg Ala Gly Pro Ser Tyr Ser Met Pro Val His Ala Ala
65 70 75 80

Val Gln Met Thr Thr Glu Gln Leu Lys Thr Glu Phe Asp Lys Leu Phe
85 90 95

Glu Asp Leu Lys Glu Asp Asp Lys Thr His Glu Met Glu Pro Ala Glu
100 105 110

Ala Ile Glu Thr Pro Leu Leu Pro His Gln Lys Gln Ala Leu Ala Trp
115 120 125

Met Val Ser Arg Glu Asn Ser Lys Glu Leu Pro Pro Phe Trp Glu Gln
130 135 140

Arg Asn Asp Leu Tyr Tyr Asn Thr Ile Thr Asn Phe Ser Glu Lys Asp
145 150 155 160

Arg Pro Glu Asn Val His Gly Gly Ile Leu Ala Asp Asp Met Gly Leu
165 170 175

Gly Lys Thr Leu Thr Ala Ile Ala Val Ile Leu Thr Asn Phe His Asp
180 185 190

Gly Arg Pro Leu Pro Ile Glu Arg Val Lys Lys Asn Leu Leu Lys Lys
195 200 205

Glu Tyr Asn Val Asn Asp Gly Ser Met Lys Leu Gly Gly Asn Asn Thr
210 215 220

Ser Glu Lys Ala Asp Gly Leu Ser Lys Asp Ala Ser Arg Cys Ser Glu
225 230 235 240

Gln Pro Ser Ile Ser Asp Ile Lys Glu Lys Ser Lys Phe Arg Met Ser
 245 250 255

Glu Leu Ser Ser Ser Arg Pro Lys Arg Arg Lys Thr Ala Val Gln Tyr
 260 265 270

Ile Glu Ser Ser Asp Ser Glu Glu Ile Glu Thr Ser Glu Leu Pro Gln
 275 280 285

Lys Met Lys Gly Lys Leu Lys Asn Val Gln Ser Glu Thr Lys Gly Arg
 290 295 300

Ala Lys Ala Gly Ser Ser Lys Val Ile Glu Asp Val Ala Phe Ala Cys
 305 310 315 320

Ala Leu Thr Ser Ser Val Pro Thr Thr Lys Lys Lys Met Leu Lys Lys
 325 330 335

Gly Ala Cys Ala Val Glu Gly Ser Lys Lys Thr Asp Val Glu Glu Arg
 340 345 350

Pro Arg Thr Thr Leu Ile Ile Cys Pro Leu Ser Val Leu Ser Asn Trp
 355 360 365

Ile Asp Gln Phe Gly Gln His Ile Lys Ser Asp Val His Leu Asn Phe
 370 375 380

Tyr Val Tyr Tyr Gly Pro Asp Arg Ile Arg Glu Pro Ala Leu Leu Ser
 385 390 395 400

Lys Gln Asp Ile Val Leu Thr Thr Tyr Asn Ile Leu Thr His Asp Tyr
 405 410 415

Gly Thr Lys Gly Asp Ser Pro Leu His Ser Ile Arg Trp Leu Arg Val
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Ile Leu Asp Glu Gly His Ala Ile Arg Asn Pro Asn Ala Gln Gln Thr
 435 440 445

Lys Ala Val Leu Asp Leu Glu Ser Glu Arg Arg Trp Val Leu Thr Gly
 450 455 460

Thr Pro Ile Gln Asn Ser Leu Lys Asp Leu Trp Ser Leu Leu Ser Phe
 465 470 475 480

Leu Lys Leu Lys Pro Phe Ile Asp Arg Glu Trp Trp His Arg Thr Ile
485 490 495

Gln Arg Pro Val Thr Met Gly Asp Glu Gly Gly Leu Arg Arg Leu Gln
500 505 510

Ser Leu Ile Lys Asn Ile Thr Leu Arg Arg Thr Lys Thr Ser Lys Ile
515 520 525

Lys Gly Lys Pro Val Leu Glu Leu Pro Glu Arg Lys Val Phe Ile Gln
530 535 540

His Ile Thr Leu Ser Asp Glu Glu Arg Lys Ile Tyr Gln Ser Val Lys
545 550 555 560

Asn Glu Gly Arg Ala Thr Ile Gly Arg Tyr Phe Asn Glu Gly Thr Val
565 570 575

Leu Ala His Tyr Ala Asp Val Leu Gly Leu Leu Leu Arg Leu Arg Gln
580 585 590

Ile Cys Cys His Thr Tyr Leu Leu Thr Asn Ala Val Ser Ser Asn Gly
595 600 605

Pro Ser Gly Asn Asp Thr Pro Glu Glu Leu Arg Lys Lys Leu Ile Arg
610 615 620

Lys Met Lys Leu Ile Leu Ser Ser Gly Ser Asp Glu Glu Cys Ala Ile
625 630 635 640

Cys Leu Asp Ser Leu Thr Val Pro Val Ile Thr His Cys Ala His Val
645 650 655

Phe Cys Lys Pro Cys Ile Cys Gln Val Ile Gln Asn Glu Gln Pro His
660 665 670

Ala Lys Cys Pro Leu Cys Arg Asn Asp Ile His Glu Asp Asn Leu Leu
675 680 685

Glu Cys Pro Pro Glu Glu Leu Ala Arg Asp Ser Glu Lys Lys Ser Asp
690 695 700

Met Glu Trp Thr Ser Ser Ser Lys Ile Asn Ala Leu Met His Ala Leu
705 710 715 720

Thr Asp Leu Arg Lys Lys Asn Pro Asn Ile Lys Ser Leu Val Val Ser
22

725

730

735

Gln Phe Thr Thr Phe Leu Ser Leu Ile Glu Ile Pro Leu Lys Ala Ser
740 745 750

Gly Phe Val Phe Thr Arg Leu Asp Gly Ser Met Ala Gln Lys Lys Arg
755 760 765

Val	Glu	Ser	Ile	Gln	Cys	Phe	Gln	Asn	Thr	Glu	Ala	Gly	Ser	Pro	Thr
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Ile Met Leu Leu Ser Leu Arg Ala Gly Gly Val Gly Leu Asn Leu Ser
785 790 795 800

Ala Ala Ser Arg Val Phe Leu Met Asp Pro Ala Trp Asn Pro Ala Ala
805 810 815

Glu Asp Gln Cys Phe Asp Arg Cys His Arg Leu Gly Gln Lys Gln Glu
820 825 830

Val	Ile	Ile	Thr	Lys	Phe	Ile	Val	Lys	Asp	Ser	Val	Glu	Glu	Asn	Met
		835					840					845			

Leu Lys Ile Gln Asn Lys Lys Arg Glu Leu Ala Ala Gly Ala Phe Gly
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Ile Arg Thr Leu Ile Asp Leu
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caa att aaa gct ttc aca gca ctg cgc ttc ctc tca gaa cct tct gat	144
Gln Ile Lys Ala Phe Thr Ala Leu Arg Phe Leu Ser Glu Pro Ser Asp	
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gcc gtc aca atg cgg gga gga aat gtc ctc ctc gac tgc tcc gcg gag	192
Ala Val Thr Met Arg Gly Gly Asn Val Leu Leu Asp Cys Ser Ala Glu	
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Leu Ala Leu Gly Met Asp Glu Arg Lys Gln Gln Leu Ser Asn Gly Ser	
85 90 95	
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Leu Leu Ile Gln Asn Ile Leu His Ser Arg His His Lys Pro Asp Glu	
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Gly Leu Tyr Gln Cys Glu Ala Ser Leu Gly Asp Ser Gly Ser Ile Ile	
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Ser Arg Thr Ala Lys Val Ala Val Ala Gly Pro Leu Arg Phe Leu Ser	
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Gln Thr Glu Ser Val Thr Ala Phe Met Gly Asp Thr Val Leu Leu Lys	
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Cys Glu Val Ile Gly Glu Pro Met Pro Thr Ile His Trp Gln Lys Asn	
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Gln Gln Asp Leu Thr Pro Ile Pro Gly Asp Ser Arg Val Val Val Leu	
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Pro Ser Gly Ala Leu Gln Ile Ser Arg Leu Gln Pro Gly Asp Ile Gly	
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Ile Tyr Arg Cys Ser Ala Arg Asn Pro Ala Ser Ser Arg Thr Gly Asn	
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Tyr Phe Leu Gln Arg Pro Ser Asn Val Val Ala Ile Glu Gly Lys Asp	
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Gly	Pro	Val	Glu	Asn	Leu	Gln	Ala	Val	Ser	Thr	Ser	Pro	Thr	Ser	Ile		
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Tyr	Arg	Leu	Phe	Cys	Thr	Glu	Val	Ser	Thr	Gly	Lys	Glu	Gln	Asn	Ile		
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Glu	Tyr	Ser	Leu	Arg	Phe	Leu	Ala	Tyr	Asn	Arg	Tyr	Gly	Pro	Gly	Val		
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Asn	Ala	Gly	Glu	Gly	Val	Pro	Leu	Tyr	Glu	Ser	Ala	Thr	Thr	Arg	Ser	
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Gly Leu Tyr Gln Cys Glu Ala Ser Leu Gly Asp Ser Gly Ser Ile Ile
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Gln Gly Arg His Gly Asp Gly Gly Tyr Trp Pro Val Asp Thr Asn		
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Leu Ile Asp Arg Ser Thr Leu Asn Glu Pro Pro Ile Gly Gln Met		
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His Pro Pro His Gly Ser Val Thr Pro Gln Lys Asn Ser Asn Leu		
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Leu Val Ile Ile Val Val Thr Val Gly Val Ile Thr Val Leu Val		
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Val Val Ile Val Ala Val Ile Cys Thr Arg Arg Ser Ser Ala Gln		
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Gln Arg Lys Lys Arg Ala Thr His Ser Ala Gly Lys Arg Lys Gly		
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Ser Gln Lys Asp Leu Arg Pro Pro Asp Leu Trp Ile His His Glu		
1145	1150	1155

Glu Met 1160	Glu Met Lys Asn Ile 1165	Glu Lys Pro Ser Gly Thr Asp Pro 1170
Ala Gly 1175	Arg Asp Ser Pro Ile 1180	Gln Ser Cys Gln Asp Leu Thr Pro 1185
Val Ser 1190	His Ser Gln Ser Glu 1195	Thr Gln Leu Gly Ser Lys Ser Thr 1200
Ser His 1205	Ser Gly Gln Asp Thr 1210	Glu Glu Ala Gly Ser Ser Met Ser 1215
Thr Leu 1220	Glu Arg Ser Leu Ala 1225	Ala Arg Arg Ala Pro Arg Ala Lys 1230
Leu Met 1235	Ile Pro Met Asp Ala 1240	Gln Ser Asn Asn Pro Ala Val Val 1245
Ser Ala 1250	Ile Pro Val Pro Thr 1255	Leu Glu Ser Ala Gln Tyr Pro Gly 1260
Ile Leu 1265	Pro Ser Pro Thr Cys 1270	Gly Tyr Pro His Pro Gln Phe Thr 1275
Leu Arg 1280	Pro Val Pro Phe Pro 1285	Thr Leu Ser Val Asp Arg Gly Phe 1290
Gly Ala 1295	Gly Arg Ser Gln Ser 1300	Val Ser Glu Gly Pro Thr Thr Gln 1305
Gln Pro 1310	Pro Met Leu Pro Pro 1315	Ser Gln Pro Glu His Ser Ser Ser 1320
Glu Glu 1325	Ala Pro Ser Arg Thr 1330	Ile Pro Thr Ala Cys Val Arg Pro 1335
Thr His 1340	Pro Leu Arg Ser Phe 1345	Ala Asn Pro Leu Leu Pro Pro Pro 1350
Met Ser 1355	Ala Ile Glu Pro Lys 1360	Val Pro Tyr Thr Pro Leu Leu Ser 1365
Gln Pro 1370	Gly Pro Thr Leu Pro 1375	Lys Thr His Val Lys Thr Ala Ser 1380

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 Leu Arg Gln Glu Leu Glu Asp Asn Ser Asn His Leu Thr Lys Leu Glu
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 Thr Glu Ala Ser Asn Met Lys Glu Val Leu Lys Gln Leu Gln Gly Ser
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 Ile Glu Asp Glu Ala Met Ala Ser Ser Gly Gln Ile Asp Leu Leu Glu
 55 60 65 70

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 Arg Leu Lys Glu Leu Asn Leu Asp Ser Ser Asn Phe Pro Gly Val Lys
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Leu Arg Ser Lys Met Ser Leu Arg Ser Tyr Gly Ser Arg Glu Gly Ser	
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Val Ser Ser Arg Ser Gly Glu Cys Ser Pro Val Pro Met Gly Ser Phe	
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Glu Glu Leu Glu Lys Glu Arg Ser Leu Leu Leu Ala Asp Leu Asp Lys	
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Lys Arg Ile Asp Ser Leu Pro Leu Thr Glu Asn Phe Ser Leu Gln Thr	
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Asp Met Thr Arg Arg Gln Leu Glu Tyr Glu Ala Arg Gln Ile Arg Val	
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Ala Met Glu Glu Gln Leu Gly Thr Cys Gln Asp Met Glu Lys Arg Ala	
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Gln Arg Arg Ile Ala Arg Ile Gln Gln Ile Glu Lys Asp Ile Leu Arg	
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Ile Arg Gln Leu Leu Gln Ser Gln Ala Thr Glu Ala Glu Arg Ser Ser	
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Gln Asn Lys His Glu Thr Gly Ser His Asp Ala Glu Arg Gln Asn Glu	
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Ser Ser Thr His Ser Ala Pro Arg Arg Leu Thr Ser His Leu Gly Thr	
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Lys Val Glu Met Val Tyr Ser Leu Leu Ser Met Leu Gly Thr His Asp	
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Ser	Cys	Ile	Ser	Met	Arg	Gln	Ser	Gly	Cys	Leu	Pro	Leu	Leu	Ile	Gln	
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ctt	tta	cat	ggc	aat	gac	aaa	gac	tct	gta	ttg	ttg	gga	aat	tcc	cgg	1160
Leu	Leu	His	Gly	Asn	Asp	Lys	Asp	Ser	Val	Leu	Leu	Gly	Asn	Ser	Arg	
	360					365				370						
ggc	agt	aaa	gag	gct	cgg	gcc	agg	gcc	agt	gca	gca	ctc	cac	aac	atc	1208
Gly	Ser	Lys	Glu	Ala	Arg	Ala	Arg	Ala	Ser	Ala	Ala	Leu	His	Asn	Ile	
375					380				385						390	
att	cac	tca	cag	cct	gat	gac	aag	aga	ggc	agg	cgt	gaa	atc	cga	gtc	1256
Ile	His	Ser	Gln	Pro	Asp	Asp	Lys	Arg	Gly	Arg	Arg	Glu	Ile	Arg	Val	
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ctt	cat	ctt	ttg	gaa	cag	ata	cgc	gct	tac	tgt	gaa	acc	tgt	tggt	gag	1304
Leu	His	Leu	Leu	Glu	Gln	Ile	Arg	Ala	Tyr	Cys	Glu	Thr	Cys	Trp	Glu	
			410				415						420			
tggt	cag	gaa	gct	cat	gaa	cca	ggc	atg	gac	cag	gac	aaa	aat	cca	atg	1352
Trp	Gln	Glu	Ala	His	Glu	Pro	Gly	Met	Asp	Gln	Asp	Lys	Asn	Pro	Met	
		425					430					435				
cca	gct	cct	gtt	gaa	cat	cag	atc	tgt	cct	gct	gtg	tgt	gtt	cta	atg	1400
Pro	Ala	Pro	Val	Glu	His	Gln	Ile	Cys	Pro	Ala	Val	Cys	Val	Leu	Met	
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Lys	Leu	Ser	Phe	Asp	Glu	Glu	His	Arg	His	Ala	Met	Asn	Glu	Leu	Gly	
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gga	cta	cag	gcc	att	gca	gaa	tta	ttg	caa	gtg	gac	tgt	gaa	atg	tac	1496
Gly	Leu	Gln	Ala	Ile	Ala	Glu	Leu	Leu	Gln	Val	Asp	Cys	Glu	Met	Tyr	
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ggg	ctt	act	aat	gac	cac	tac	agt	att	aca	cta	aga	cga	tat	gct	gga	1544
Gly	Leu	Thr	Asn	Asp	His	Tyr	Ser	Ile	Thr	Leu	Arg	Arg	Tyr	Ala	Gly	
			490				495						500			
atg	gct	ttg	aca	aac	ttg	act	ttt	gga	gat	gta	gcc	aac	aag	gct	acg	1592
Met	Ala	Leu	Thr	Asn	Leu	Thr	Phe	Gly	Asp	Val	Ala	Asn	Lys	Ala	Thr	
		505					510					515				
cta	tgc	tct	atg	aaa	ggc	tgc	atg	aga	gca	ctt	gtg	gcc	caa	cta	aaa	1640
Leu	Cys	Ser	Met	Lys	Gly	Cys	Met	Arg	Ala	Leu	Val	Ala	Gln	Leu	Lys	
	520					525					530					
tct	gaa	agt	gaa	gac	tta	cag	cag	gtt	att	gca	agt	gtt	ttg	agg	aat	1688
Ser	Glu	Ser	Glu	Asp	Leu	Gln	Gln	Val	Ile	Ala	Ser	Val	Leu	Arg	Asn	
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ttg	tct	tggt	cga	gca	gat	gta	aat	agt	aaa	aag	acg	ttg	cga	gaa	gtt	1736
Leu	Ser	Trp	Arg	Ala	Asp	Val	Asn	Ser	Lys	Lys	Thr	Leu	Arg	Glu	Val	
				555				560						565		
gga	agt	gtg	aaa	gca	ttg	atg	gaa	tgt	gct	tta	gaa	gtt	aaa	aag	gaa	1784
Gly	Ser	Val	Lys	Ala	Leu	Met	Glu	Cys	Ala	Leu	Glu	Val	Lys	Lys	Glu	

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Ser	Thr	Leu	Lys	Ser	Val	Leu	Ser	Ala	Leu	Trp	Asn	Leu	Ser	Ala	His						
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tgc	act	gag	aat	aaa	gct	gat	ata	tgt	gct	gta	gat	ggg	gca	ctt	gca						1880
Cys	Thr	Glu	Asn	Lys	Ala	Asp	Ile	Cys	Ala	Val	Asp	Gly	Ala	Leu	Ala						
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ttt	ttg	gtt	ggc	act	ctt	act	tac	cgg	agc	cag	aca	aac	act	tta	gcc						1928
Phe	Leu	Val	Gly	Thr	Leu	Thr	Tyr	Arg	Ser	Gln	Thr	Asn	Thr	Leu	Ala						
	615				620					625					630						
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Ile	Ile	Glu	Ser	Gly	Gly	Gly	Ile	Leu	Arg	Asn	Val	Ser	Ser	Leu	Ile						
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gct	aca	aat	gag	gac	cac	agg	caa	atc	cta	aga	gag	aac	aac	tgt	cta						2024
Ala	Thr	Asn	Glu	Asp	His	Arg	Gln	Ile	Leu	Arg	Glu	Asn	Asn	Cys	Leu						
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caa	act	tta	tta	caa	cac	tta	aaa	tct	cat	agt	ttg	aca	ata	gtc	agt						2072
Gln	Thr	Leu	Leu	Gln	His	Leu	Lys	Ser	His	Ser	Leu	Thr	Ile	Val	Ser						
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aat	gca	tgt	gga	act	ttg	tgg	aat	ctc	tca	gca	aga	aat	cct	aaa	gac						2120
Asn	Ala	Cys	Gly	Thr	Leu	Trp	Asn	Leu	Ser	Ala	Arg	Asn	Pro	Lys	Asp						
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cag	gaa	gca	tta	tgg	gac	atg	ggg	gca	gtt	agc	atg	ctc	aag	aac	ctc						2168
Gln	Glu	Ala	Leu	Trp	Asp	Met	Gly	Ala	Val	Ser	Met	Leu	Lys	Asn	Leu						
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Ile	His	Ser	Lys	His	Lys	Met	Ile	Ala	Met	Gly	Ser	Ala	Ala	Ala	Leu						
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agg	aat	ctc	atg	gca	aat	agg	cct	gcg	aag	tac	aag	gat	gcc	aat	att						2264
Arg	Asn	Leu	Met	Ala	Asn	Arg	Pro	Ala	Lys	Tyr	Lys	Asp	Ala	Asn	Ile						
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Met	Ser	Pro	Gly	Ser	Ser	Leu	Pro	Ser	Leu	His	Val	Arg	Lys	Gln	Lys						
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gcc	cta	gaa	gca	gaa	tta	gat	gct	cag	cac	tta	tca	gaa	act	ttt	gac						2360
Ala	Leu	Glu	Ala	Glu	Leu	Asp	Ala	Gln	His	Leu	Ser	Glu	Thr	Phe	Asp						
	760					765					770										
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Asn	Ile	Asp	Asn	Leu	Ser	Pro	Lys	Ala	Ser	His	Arg	Ser	Lys	Gln	Arg						
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cac	aag	caa	agt	ctc	tat	ggg	gat	tat	gtt	ttt	gac	acc	aat	cga	cat						2456
His	Lys	Gln	Ser	Leu	Tyr	Gly	Asp	Tyr	Val	Phe	Asp	Thr	Asn	Arg	His						
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Asp	Asp	Asn	Arg	Ser	Asp	Asn	Phe	Asn	Thr	Gly	Asn	Met	Thr	Val	Leu						
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Tyr Asn Phe Thr Lys Ser Glu Asn Ser Asn Arg Thr Cys Ser Met Pro	
935 940 945 950	
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Tyr Ala Lys Leu Glu Tyr Lys Arg Ser Ser Asn Asp Ser Leu Asn Ser	
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gtc agt agt agt gat ggt tat ggt aaa aga ggt caa atg aaa ccc tcg	2984
Val Ser Ser Ser Asp Gly Tyr Gly Lys Arg Gly Gln Met Lys Pro Ser	
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Ile Glu Ser Tyr Ser Glu Asp Asp Glu Ser Lys Phe Cys Ser Tyr Gly	
985 990 995	
caa tac cca gcc gac cta gcc cat aaa ata cat agt gca aat cat	3077
Gln Tyr Pro Ala Asp Leu Ala His Lys Ile His Ser Ala Asn His	
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Leu Lys Tyr Ser Asp Glu Gln Leu Asn Ser Gly Arg Gln Ser Pro	
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Ser Gln Asn Glu Arg Trp Ala Arg Pro Lys His Ile Ile Glu Asp	
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Glu Ile	Lys Gln Ser Glu Gln	Arg Gln Ser Arg Asn	Gln Ser Thr	
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act tat	cct gtt tat act gag	agc act gat gat aaa	cac ctc aag	3302
Thr Tyr	Pro Val Tyr Thr Glu	Ser Thr Asp Asp Lys	His Leu Lys	
1075	1080	1085		
ttc caa	cca cat ttt gga cag	cag gaa tgt gtt tct	cca tac agg	3347
Phe Gln	Pro His Phe Gly Gln	Gln Glu Cys Val Ser	Pro Tyr Arg	
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Ser Arg	Gly Ala Asn Gly Ser	Glu Thr Asn Arg Val	Gly Ser Asn	
1105	1110	1115		
cat gga	att aat caa aat gta	agc cag tct ttg tgt	caa gaa gat	3437
His Gly	Ile Asn Gln Asn Val	Ser Gln Ser Leu Cys	Gln Glu Asp	
1120	1125	1130		
gac tat	gaa gat gat aag cct	acc aat tat agt gaa	cggtac tct	3482
Asp Tyr	Glu Asp Asp Lys Pro	Thr Asn Tyr Ser Glu	Arg Tyr Ser	
1135	1140	1145		
gaa gaa	gaa cag cat gaa gaa	gaa gag aga cca aca	aat tat agc	3527
Glu Glu	Glu Gln His Glu Glu	Glu Glu Arg Pro Thr	Asn Tyr Ser	
1150	1155	1160		
ata aaa	tat aat gaa gag aaa	cggtac cat gtg gat cag	cct att gat	3572
Ile Lys	Tyr Asn Glu Glu Lys	Arg His Val Asp Gln	Pro Ile Asp	
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Tyr Ser	Leu Lys Tyr Ala Thr	Asp Ile Pro Ser Ser	Gln Lys Gln	
1180	1185	1190		
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Ser Phe	Ser Phe Ser Lys Ser	Ser Ser Gly Gln Ser	Ser Lys Thr	
1195	1200	1205		
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Glu His	Met Ser Ser Ser Ser	Glu Asn Thr Ser Thr	Pro Ser Ser	
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Asn Ala	Lys Arg Gln Asn Gln	Leu His Pro Ser Ser	Ala Gln Ser	
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Arg Ser	Gly Gln Pro Gln Lys	Ala Ala Thr Cys Lys	Val Ser Ser	
1240	1245	1250		
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Ile Asn	Gln Glu Thr Ile Gln	Thr Tyr Cys Val Glu	Asp Thr Pro	
1255	1260	1265		
ata tgt	ttt tca aga tgt agt	tca tta tca tct ttg	tca tca gct	3887
Ile Cys	Phe Ser Arg Cys Ser	Ser Leu Ser Ser Leu	Ser Ser Ala	
1270	1275	1280		
gaa gat	gaa ata gga tgt aat	cag acg aca cag gaa	gca gat tct	3932

Glu Asp	Glu Ile	Gly Cys	Asn	Gln Thr	Thr Gln	Glu Ala	Asp Ser	
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gct aat	acc ctg	caa ata	gca	gaa ata	aaa gaa	aag att	gga act	3977
Ala Asn	Thr Leu	Gln Ile	Ala	Glu Ile	Lys Glu	Lys Ile	Gly Thr	
1300			1305			1310		
agg tca	gct gaa	gat cct	gtg	agc gaa	gtt cca	gca gtg	tca cag	4022
Arg Ser	Ala Glu	Asp Pro	Val	Ser Glu	Val Pro	Ala Val	Ser Gln	
1315			1320			1325		
cac cct	aga acc	aaa tcc	agc	aga ctg	cag ggt	tct agt	tta tct	4067
His Pro	Arg Thr	Lys Ser	Ser	Arg Leu	Gln Gly	Ser Ser	Leu Ser	
1330			1335			1340		
tca gaa	tca gcc	agg cac	aaa	gct gtt	gaa ttt	tct tca	gga gcg	4112
Ser Glu	Ser Ala	Arg His	Lys	Ala Val	Glu Phe	Ser Ser	Gly Ala	
1345			1350			1355		
aaa tct	ccc tcc	aaa agt	ggt	gct cag	aca ccc	aaa agt	cca cct	4157
Lys Ser	Pro Ser	Lys Ser	Gly	Ala Gln	Thr Pro	Lys Ser	Pro Pro	
1360			1365			1370		
gaa cac	tat gtt	cag gag	acc	cca ctc	atg ttt	agc aga	tgt act	4202
Glu His	Tyr Val	Gln Glu	Thr	Pro Leu	Met Phe	Ser Arg	Cys Thr	
1375			1380			1385		
tct gtc	agt tca	ctt gat	agt	ttt gag	agt cgt	tcg att	gcc agc	4247
Ser Val	Ser Ser	Leu Asp	Ser	Phe Glu	Ser Arg	Ser Ile	Ala Ser	
1390			1395			1400		
tcc gtt	cag agt	gaa cca	tgc	agt gga	atg gta	agt ggc	att ata	4292
Ser Val	Gln Ser	Glu Pro	Cys	Ser Gly	Met Val	Ser Gly	Ile Ile	
1405			1410			1415		
agc ccc	agt gat	ctt cca	gat	agc cct	gga caa	acc atg	cca cca	4337
Ser Pro	Ser Asp	Leu Pro	Asp	Ser Pro	Gly Gln	Thr Met	Pro Pro	
1420			1425			1430		
agc aga	agt aaa	aca cct	cca	cca cct	cct caa	aca gct	caa acc	4382
Ser Arg	Ser Lys	Thr Pro	Pro	Pro Pro	Pro Gln	Thr Ala	Gln Thr	
1435			1440			1445		
aag cga	gaa gta	cct aaa	aat	aaa gca	cct act	gct gaa	aag aga	4427
Lys Arg	Glu Val	Pro Lys	Asn	Lys Ala	Pro Thr	Ala Glu	Lys Arg	
1450			1455			1460		
gag agt	gga cct	aag caa	gct	gca gta	aat gct	gca gtt	cag agg	4472
Glu Ser	Gly Pro	Lys Gln	Ala	Ala Val	Asn Ala	Ala Val	Gln Arg	
1465			1470			1475		
gtc cag	gtt ctt	cca gat	gct	gat act	tta tta	cat ttt	gcc acg	4517
Val Gln	Val Leu	Pro Asp	Ala	Asp Thr	Leu Leu	His Phe	Ala Thr	
1480			1485			1490		
gaa agt	act cca	gat gga	ttt	tct tgt	tca tcc	agc ctg	agt gct	4562
Glu Ser	Thr Pro	Asp Gly	Phe	Ser Cys	Ser Ser	Ser Leu	Ser Ala	
1495			1500			1505		
ctg agc	ctc gat	gag cca	ttt	ata cag	aaa gat	gtg gaa	tta aga	4607
Leu Ser	Leu Asp	Glu Pro	Phe	Ile Gln	Lys Asp	Val Glu	Leu Arg	

1510	1515	1520	
ata atg cct cca gtt cag gaa Ile Met Pro Pro Val Gln Glu 1525	aat gac aat ggg aat Asn Asp Asn Gly Asn 1530	gaa aca gaa Glu Thr Glu 1535	4652
tca gag cag cct aaa gaa tca Ser Glu Gln Pro Lys Glu Ser 1540	aat gaa aac caa gag Asn Glu Asn Gln Glu 1545	aaa gag gca Lys Glu Ala 1550	4697
gaa aaa act att gat tct gaa Glu Lys Thr Ile Asp Ser Glu 1555	aag gac cta tta gat Lys Asp Leu Leu Asp 1560	gat tca gat Asp Ser Asp 1565	4742
gat gat gat att gaa ata cta Asp Asp Asp Ile Glu Ile Leu 1570	gaa gaa tgt att att Glu Glu Cys Ile Ile 1575	tct gcc atg Ser Ala Met 1580	4787
cca aca aag tca tca cgt aaa Pro Thr Lys Ser Ser Arg Lys 1585	gca aaa aag cca gcc Ala Lys Lys Pro Ala 1590	cag act gct Gln Thr Ala 1595	4832
tca aaa tta cct cca cct gtg Ser Lys Leu Pro Pro Pro Val 1600	gca agg aaa cca agt Ala Arg Lys Pro Ser 1605	cag ctg cct Gln Leu Pro 1610	4877
gtg tac aaa ctt cta cca tca Val Tyr Lys Leu Leu Pro Ser 1615	caa aac agg ttg caa Gln Asn Arg Leu Gln 1620	ccc caa aag Pro Gln Lys 1625	4922
cat gtt agt ttt aca ccg ggg His Val Ser Phe Thr Pro Gly 1630	gat gat atg cca cgg Asp Asp Met Pro Arg 1635	gtg tat tgt Val Tyr Cys 1640	4967
gtt gaa ggg aca cct ata aac Val Glu Gly Thr Pro Ile Asn 1645	ttt tcc aca gct aca Phe Ser Thr Ala Thr 1650	tct cta agt Ser Leu Ser 1655	5012
gat cta aca atc gaa tcc cct Asp Leu Thr Ile Glu Ser Pro 1660	cca aat gag tta gct Pro Asn Glu Leu Ala 1665	gct gga gaa Ala Gly Glu 1670	5057
gga gtt aga gga gga gca cag Gly Val Arg Gly Gly Ala Gln 1675	tca ggt gaa ttt gaa Ser Gly Glu Phe Glu 1680	aaa cga gat Lys Arg Asp 1685	5102
acc att cct aca gaa ggc aga Thr Ile Pro Thr Glu Gly Arg 1690	agt aca gat gag gct Ser Thr Asp Glu Ala 1695	caa gga gga Gln Gly Gly 1700	5147
aaa acc tca tct gta acc ata Lys Thr Ser Ser Val Thr Ile 1705	cct gaa ttg gat gac Pro Glu Leu Asp Asp 1710	aat aaa gca Asn Lys Ala 1715	5192
gag gaa ggt gat att ctt gca Glu Glu Gly Asp Ile Leu Ala 1720	gaa tgc att aat tct Glu Cys Ile Asn Ser 1725	gct atg ccc Ala Met Pro 1730	5237
aaa ggg aaa agt cac aag cct Lys Gly Lys Ser His Lys Pro 1735	ttc cgt gtg aaa aag Phe Arg Val Lys Lys 1740	ata atg gac Ile Met Asp 1745	5282

cag gtc	cag caa gca tct gcg	tcg tct tct gca ccc	aac aaa aat	5327
Gln Val	Gln Gln Ala Ser Ala	Ser Ser Ser Ala Pro	Asn Lys Asn	
1750	1755	1760		
cag tta	gat ggt aag aaa aag	aaa cca act tca cca	gta aaa cct	5372
Gln Leu	Asp Gly Lys Lys Lys	Lys Pro Thr Ser Pro	Val Lys Pro	
1765	1770	1775		
ata cca	caa aat act gaa tat	agg aca cgt gta aga	aaa aat gca	5417
Ile Pro	Gln Asn Thr Glu Tyr	Arg Thr Arg Val Arg	Lys Asn Ala	
1780	1785	1790		
gac tca	aaa aat aat tta aat	gct gag aga gtt ttc	tca gac aac	5462
Asp Ser	Lys Asn Asn Leu Asn	Ala Glu Arg Val Phe	Ser Asp Asn	
1795	1800	1805		
aaa gat	tca aag aaa cag aat	ttg aaa aat aat tcc	aag gac ttc	5507
Lys Asp	Ser Lys Lys Gln Asn	Leu Lys Asn Asn Ser	Lys Asp Phe	
1810	1815	1820		
aat gat	aag ctc cca aat aat	gaa gat aga gtc aga	gga agt ttt	5552
Asn Asp	Lys Leu Pro Asn Asn	Glu Asp Arg Val Arg	Gly Ser Phe	
1825	1830	1835		
gct ttt	gat tca cct cat cat	tac acg cct att gaa	gga act cct	5597
Ala Phe	Asp Ser Pro His His	Tyr Thr Pro Ile Glu	Gly Thr Pro	
1840	1845	1850		
tac tgt	ttt tca cga aat gat	tct ttg agt tct cta	gat ttt gat	5642
Tyr Cys	Phe Ser Arg Asn Asp	Ser Leu Ser Ser Leu	Asp Phe Asp	
1855	1860	1865		
gat gat	gat gtt gac ctt tcc	agg gaa aag gct gaa	tta aga aag	5687
Asp Asp	Asp Val Asp Leu Ser	Arg Glu Lys Ala Glu	Leu Arg Lys	
1870	1875	1880		
gca aaa	gaa aat aag gaa tca	gag gct aaa gtt acc	agc cac aca	5732
Ala Lys	Glu Asn Lys Glu Ser	Glu Ala Lys Val Thr	Ser His Thr	
1885	1890	1895		
gaa cta	acc tcc aac caa caa	tca gct aat aag aca	caa gct att	5777
Glu Leu	Thr Ser Asn Gln Gln	Ser Ala Asn Lys Thr	Gln Ala Ile	
1900	1905	1910		
gca aag	cag cca ata aat cga	ggg cag cct aaa ccc	ata ctt cag	5822
Ala Lys	Gln Pro Ile Asn Arg	Gly Gln Pro Lys Pro	Ile Leu Gln	
1915	1920	1925		
aaa caa	tcc act ttt ccc cag	tca tcc aaa gac ata	cca gac aga	5867
Lys Gln	Ser Thr Phe Pro Gln	Ser Ser Lys Asp Ile	Pro Asp Arg	
1930	1935	1940		
ggg gca	gca act gat gaa aag	tta cag aat ttt gct	att gaa aat	5912
Gly Ala	Ala Thr Asp Glu Lys	Leu Gln Asn Phe Ala	Ile Glu Asn	
1945	1950	1955		
act cca	gtt tgc ttt tct cat	aat tcc tct ctg agt	tct ctc agt	5957
Thr Pro	Val Cys Phe Ser His	Asn Ser Ser Leu Ser	Ser Leu Ser	
1960	1965	1970		

gac att gac caa gaa aac aac Asp Ile Asp Gln Glu Asn Asn 1975	aat aaa gaa aat gaa Asn Lys Glu Asn Glu 1980	cct atc aaa Pro Ile Lys 1985	6002
gag act gag ccc cct gac tca Glu Thr Glu Pro Pro Asp Ser 1990	cag gga gaa cca agt Gln Gly Glu Pro Ser 1995	aaa cct caa Lys Pro Gln 2000	6047
gca tca ggc tat gct cct aaa Ala Ser Gly Tyr Ala Pro Lys 2005	tca ttt cat gtt gaa Ser Phe His Val Glu 2010	gat acc cca Asp Thr Pro 2015	6092
gtt tgt ttc tca aga aac agt Val Cys Phe Ser Arg Asn Ser 2020	tct ctc agt tct ctt Ser Leu Ser Ser Leu 2025	agt att gac Ser Ile Asp 2030	6137
tct gaa gat gac ctg ttg cag Ser Glu Asp Asp Leu Leu Gln 2035	gaa tgt ata agc tcc Glu Cys Ile Ser Ser 2040	gca atg cca Ala Met Pro 2045	6182
aaa aag aaa aag cct tca aga Lys Lys Lys Lys Pro Ser Arg 2050	ctc aag ggt gat aat Leu Lys Gly Asp Asn 2055	gaa aaa cat Glu Lys His 2060	6227
agt ccc aga aat atg ggt ggc Ser Pro Arg Asn Met Gly Gly 2065	ata tta ggt gaa gat Ile Leu Gly Glu Asp 2070	ctg aca ctt Leu Thr Leu 2075	6272
gat ttg aaa gat ata cag aga Asp Leu Lys Asp Ile Gln Arg 2080	cca gat tca gaa cat Pro Asp Ser Glu His 2085	ggg cta tcc Gly Leu Ser 2090	6317
cct gat tca gaa aat ttt gat Pro Asp Ser Glu Asn Phe Asp 2095	tgg aaa gct att cag Trp Lys Ala Ile Gln 2100	gaa ggt gca Glu Gly Ala 2105	6362
aat tcc ata gta agt agt tta Asn Ser Ile Val Ser Ser Leu 2110	cat caa gct gct gct His Gln Ala Ala Ala 2115	gct gca tgt Ala Ala Cys 2120	6407
tta tct aga caa gct tcg tct Leu Ser Arg Gln Ala Ser Ser 2125	gat tca gat tcc atc Asp Ser Asp Ser Ile 2130	ctt tcc ctg Leu Ser Leu 2135	6452
aaa tca gga atc tct ctg gga Lys Ser Gly Ile Ser Leu Gly 2140	tca cca ttt cat ctt Ser Pro Phe His Leu 2145	aca cct gat Thr Pro Asp 2150	6497
caa gaa gaa aaa ccc ttt aca Gln Glu Glu Lys Pro Phe Thr 2155	agt aat aaa ggc cca Ser Asn Lys Gly Pro 2160	cga att cta Arg Ile Leu 2165	6542
aaa cca ggg gag aaa agt aca Lys Pro Gly Glu Lys Ser Thr 2170	ttg gaa act aaa aag Leu Glu Thr Lys Lys 2175	ata gaa tct Ile Glu Ser 2180	6587
gaa agt aaa gga atc aaa gga Glu Ser Lys Gly Ile Lys Gly 2185	gga aaa aaa gtt tat Gly Lys Lys Val Tyr 2190	aaa agt ttg Lys Ser Leu 2195	6632
att act gga aaa gtt cga tct 2195	aat tca gaa att tca 2195	ggc caa atg 2195	6677

Ile	Thr	Gly	Lys	Val	Arg	Ser	Asn	Ser	Glu	Ile	Ser	Gly	Gln	Met	
2200						2205					2210				
aaa	cag	ccc	ctt	caa	gca	aac	atg	cct	tca	atc	tct	cga	ggc	agg	6722
Lys	Gln	Pro	Leu	Gln	Ala	Asn	Met	Pro	Ser	Ile	Ser	Arg	Gly	Arg	
2215						2220					2225				
aca	atg	att	cat	att	cca	gga	gtt	cga	aat	agc	tcc	tca	agt	aca	6767
Thr	Met	Ile	His	Ile	Pro	Gly	Val	Arg	Asn	Ser	Ser	Ser	Ser	Thr	
2230						2235					2240				
agt	cct	gtt	tct	aaa	aaa	ggc	cca	ccc	ctt	aag	act	cca	gcc	tcc	6812
Ser	Pro	Val	Ser	Lys	Lys	Gly	Pro	Pro	Leu	Lys	Thr	Pro	Ala	Ser	
2245						2250					2255				
aaa	agc	cct	agt	gaa	ggc	caa	aca	gcc	acc	act	tct	cct	aga	gga	6857
Lys	Ser	Pro	Ser	Glu	Gly	Gln	Thr	Ala	Thr	Thr	Ser	Pro	Arg	Gly	
2260						2265					2270				
gcc	aag	cca	tct	gtg	aaa	tca	gaa	tta	agc	cct	gtt	gcc	agg	cag	6902
Ala	Lys	Pro	Ser	Val	Lys	Ser	Glu	Leu	Ser	Pro	Val	Ala	Arg	Gln	
2275						2280					2285				
aca	tcc	caa	ata	ggc	ggg	tca	agt	aaa	gca	cct	tct	aga	tca	gga	6947
Thr	Ser	Gln	Ile	Gly	Gly	Ser	Ser	Lys	Ala	Pro	Ser	Arg	Ser	Gly	
2290						2295					2300				
tct	aga	gat	tcg	acc	cct	tca	aga	cct	gcc	cag	caa	cca	tta	agt	6992
Ser	Arg	Asp	Ser	Thr	Pro	Ser	Arg	Pro	Ala	Gln	Gln	Pro	Leu	Ser	
2305						2310					2315				
aga	cct	ata	cag	tct	cct	ggc	cga	aac	tca	att	tcc	cct	ggc	aga	7037
Arg	Pro	Ile	Gln	Ser	Pro	Gly	Arg	Asn	Ser	Ile	Ser	Pro	Gly	Arg	
2320						2325					2330				
aat	gga	ata	agt	cct	cct	aac	aaa	tta	tct	caa	ctt	cca	agg	aca	7082
Asn	Gly	Ile	Ser	Pro	Pro	Asn	Lys	Leu	Ser	Gln	Leu	Pro	Arg	Thr	
2335						2340					2345				
tca	tcc	cct	agt	act	gct	tca	act	aag	tcc	tca	ggc	tct	gga	aaa	7127
Ser	Ser	Pro	Ser	Thr	Ala	Ser	Thr	Lys	Ser	Ser	Gly	Ser	Gly	Lys	
2350						2355					2360				
atg	tca	tat	aca	tct	cca	ggc	aga	cag	atg	agc	caa	cag	aac	ctt	7172
Met	Ser	Tyr	Thr	Ser	Pro	Gly	Arg	Gln	Met	Ser	Gln	Gln	Asn	Leu	
2365						2370					2375				
acc	aaa	caa	aca	ggc	tta	tcc	aag	aat	gcc	agt	agt	att	cca	aga	7217
Thr	Lys	Gln	Thr	Gly	Leu	Ser	Lys	Asn	Ala	Ser	Ser	Ile	Pro	Arg	
2380						2385					2390				
agt	gag	tct	gcc	tcc	aaa	gga	cta	aat	cag	atg	aat	aat	ggc	aat	7262
Ser	Glu	Ser	Ala	Ser	Lys	Gly	Leu	Asn	Gln	Met	Asn	Asn	Gly	Asn	
2395						2400					2405				
gga	gcc	aat	aaa	aag	gta	gaa	ctt	tct	aga	atg	tct	tca	act	aaa	7307
Gly	Ala	Asn	Lys	Lys	Val	Glu	Leu	Ser	Arg	Met	Ser	Ser	Thr	Lys	
2410						2415					2420				
tca	agt	gga	agt	gaa	tct	gat	aga	tca	gaa	aga	cct	gta	tta	gta	7352
Ser	Ser	Gly	Ser	Glu	Ser	Asp	Arg	Ser	Glu	Arg	Pro	Val	Leu	Val	

2425	2430	2435	
cgc cag tca act ttc atc aaa gaa gct cca agc cca acc tta aga 7397			
Arg Gln Ser Thr Phe Ile Lys Glu Ala Pro Ser Pro Thr Leu Arg			
2440	2445	2450	
aga aaa ttg gag gaa tct gct tca ttt gaa tct ctt tct cca tca 7442			
Arg Lys Leu Glu Glu Ser Ala Ser Phe Glu Ser Leu Ser Pro Ser			
2455	2460	2465	
tct aga cca gct tct ccc act agg tcc cag gca caa act cca gtt 7487			
Ser Arg Pro Ala Ser Pro Thr Arg Ser Gln Ala Gln Thr Pro Val			
2470	2475	2480	
tta agt cct tcc ctt cct gat atg tct cta tcc aca cat tcg tct 7532			
Leu Ser Pro Ser Leu Pro Asp Met Ser Leu Ser Thr His Ser Ser			
2485	2490	2495	
gtt cag gct ggt gga tgg cga aaa ctg cca cct aat ctg agt ccc 7577			
Val Gln Ala Gly Gly Trp Arg Lys Leu Pro Pro Asn Leu Ser Pro			
2500	2505	2510	
act ata gag tat aat gat gga aga cca gca aag cgc cat gat att 7622			
Thr Ile Glu Tyr Asn Asp Gly Arg Pro Ala Lys Arg His Asp Ile			
2515	2520	2525	
gca cgg tct cat tct gaa agt cct tct aga ctt cca atc aat agg 7667			
Ala Arg Ser His Ser Glu Ser Pro Ser Arg Leu Pro Ile Asn Arg			
2530	2535	2540	
tca gga acc tgg aaa cgt gag cac agc aaa cat tca tca tcc ctt 7712			
Ser Gly Thr Trp Lys Arg Glu His Ser Lys His Ser Ser Ser Leu			
2545	2550	2555	
cct cga gta agc act tgg aga aga act gga agt tca tct tca att 7757			
Pro Arg Val Ser Thr Trp Arg Arg Thr Gly Ser Ser Ser Ser Ile			
2560	2565	2570	
ctt tct gct tca tca gaa tcc agt gaa aaa gca aaa agt gag gat 7802			
Leu Ser Ala Ser Ser Glu Ser Ser Glu Lys Ala Lys Ser Glu Asp			
2575	2580	2585	
gaa aaa cat gtg aac tct att tca gga acc aaa caa agt aaa gaa 7847			
Glu Lys His Val Asn Ser Ile Ser Gly Thr Lys Gln Ser Lys Glu			
2590	2595	2600	
aac caa gta tcc gca aaa gga aca tgg aga aaa ata aaa gaa aat 7892			
Asn Gln Val Ser Ala Lys Gly Thr Trp Arg Lys Ile Lys Glu Asn			
2605	2610	2615	
gaa ttt tct ccc aca aat agt act tct cag acc gtt tcc tca ggt 7937			
Glu Phe Ser Pro Thr Asn Ser Thr Ser Gln Thr Val Ser Ser Gly			
2620	2625	2630	
gct aca aat ggt gct gaa tca aag act cta att tat caa atg gca 7982			
Ala Thr Asn Gly Ala Glu Ser Lys Thr Leu Ile Tyr Gln Met Ala			
2635	2640	2645	
cct gct gtt tct aaa aca gag gat gtt tgg gtg aga att gag gac 8027			
Pro Ala Val Ser Lys Thr Glu Asp Val Trp Val Arg Ile Glu Asp			
2650	2655	2660	

tgt ccc att aac aat cct aga tct gga aga tct ccc aca ggt aat	8072
Cys Pro Ile Asn Asn Pro Arg Ser Gly Arg Ser Pro Thr Gly Asn	
2665 2670 2675	
act ccc ccg gtg att gac agt gtt tca gaa aag gca aat cca aac	8117
Thr Pro Pro Val Ile Asp Ser Val Ser Glu Lys Ala Asn Pro Asn	
2680 2685 2690	
att aaa gat tca aaa gat aat cag gca aaa caa aat gtg ggt aat	8162
Ile Lys Asp Ser Lys Asp Asn Gln Ala Lys Gln Asn Val Gly Asn	
2695 2700 2705	
ggc agt gtt ccc atg cgt acc gtg ggt ttg gaa aat cgc ctg aac	8207
Gly Ser Val Pro Met Arg Thr Val Gly Leu Glu Asn Arg Leu Asn	
2710 2715 2720	
tcc ttt att cag gtg gat gcc cct gac caa aaa gga act gag ata	8252
Ser Phe Ile Gln Val Asp Ala Pro Asp Gln Lys Gly Thr Glu Ile	
2725 2730 2735	
aaa cca gga caa aat aat cct gtc cct gta tca gag act aat gaa	8297
Lys Pro Gly Gln Asn Asn Pro Val Pro Val Ser Glu Thr Asn Glu	
2740 2745 2750	
agt tct ata gtg gaa cgt acc cca ttc agt tct agc agc tca agc	8342
Ser Ser Ile Val Glu Arg Thr Pro Phe Ser Ser Ser Ser Ser Ser	
2755 2760 2765	
aaa cac agt tca cct agt ggg act gtt gct gcc aga gtg act cct	8387
Lys His Ser Ser Pro Ser Gly Thr Val Ala Ala Arg Val Thr Pro	
2770 2775 2780	
ttt aat tac aac cca agc cct agg aaa agc agc gca gat agc act	8432
Phe Asn Tyr Asn Pro Ser Pro Arg Lys Ser Ser Ala Asp Ser Thr	
2785 2790 2795	
tca gct cgg cca tct cag atc cca act cca gtg aat aac aac aca	8477
Ser Ala Arg Pro Ser Gln Ile Pro Thr Pro Val Asn Asn Asn Thr	
2800 2805 2810	
aag aag cga gat tcc aaa act gac agc aca gaa tcc agt gga acc	8522
Lys Lys Arg Asp Ser Lys Thr Asp Ser Thr Glu Ser Ser Gly Thr	
2815 2820 2825	
caa agt cct aag cgc cat tct ggg tct tac ctt gtg aca tct gtt	8567
Gln Ser Pro Lys Arg His Ser Gly Ser Tyr Leu Val Thr Ser Val	
2830 2835 2840	
taaaagagag gaagaatgaa actaagaaaa ttctatgtta attacaactg ctatatagac	8627
at ttgttttc aaatgaaact ttaaaagact gaaaaatttt gttaaataagggt ttgattcttg	8687
ttagagggtt ttgttctgg aagccatatt tgatagtata ctttgtcttc actggtctta	8747
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tatgttttac atgtatttaa agtagcatcc catcccaact tcctttaatt attgcttgtc	8867
ttaaaataat gaacactaca gatagaaaat atgatatatt gctgttatca atcatttcta	8927

gattataaac tgactaaact tacatcaggg aaaaattggt atttatgcaa aaaaaaatgt 8987
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aatatggttc ccgatgaaca agctttaccc agcctgtttg ctttactgca tgaatgaaac 9107
tgatggttca atttcagaag taatgattaa cagttatgtg gtcacatgat gtgcatagag 9167
atagctacag tgtaataatt tacactattt tgtgctccaa acaaaacaaa aatctgtgta 9227
actgtaaaac attgaatgaa actattttac ctgaactaga ttttatctga aagtaggtag 9287
aatttttgct atgctgtaat ttgttgata ttctggatt tgagggtgaga tggctgctct 9347
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gcataatagg cccacataat ttctcttttc ttaatattat agaaattctg tacttgaaat 9827
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gatctcagca gtgaagtata atcagcactt tgccatgctc agaaaattca aatcacatgg 10007
aacttttagag gtagatttaa tacgattaag atattcagaa gtatatttta gaatccctgc 10067
ctgttaagga aactttattt gtggtaggta cagttctggg gtacatgtta agtgtcccct 10127
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Lys Met Glu Asn Ser Asn Leu Arg Gln Glu Leu Glu Asp Asn Ser Asn
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His Leu Thr Lys Leu Glu Thr Glu Ala Ser Asn Met Lys Glu Val Leu
 35 40 45

Lys Gln Leu Gln Gly Ser Ile Glu Asp Glu Ala Met Ala Ser Ser Gly
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Gln Ile Asp Leu Leu Glu Arg Leu Lys Glu Leu Asn Leu Asp Ser Ser
 65 70 75 80

Asn Phe Pro Gly Val Lys Leu Arg Ser Lys Met Ser Leu Arg Ser Tyr
 85 90 95

Gly Ser Arg Glu Gly Ser Val Ser Ser Arg Ser Gly Glu Cys Ser Pro
 100 105 110

Val Pro Met Gly Ser Phe Pro Arg Arg Gly Phe Val Asn Gly Ser Arg
 115 120 125

Glu Ser Thr Gly Tyr Leu Glu Glu Leu Glu Lys Glu Arg Ser Leu Leu
 130 135 140

Leu Ala Asp Leu Asp Lys Glu Glu Lys Glu Lys Asp Trp Tyr Tyr Ala
 145 150 155 160

Gln Leu Gln Asn Leu Thr Lys Arg Ile Asp Ser Leu Pro Leu Thr Glu
 165 170 175

Asn Phe Ser Leu Gln Thr Asp Met Thr Arg Arg Gln Leu Glu Tyr Glu
 180 185 190

Ala Arg Gln Ile Arg Val Ala Met Glu Glu Gln Leu Gly Thr Cys Gln
 195 200 205

Asp Met Glu Lys Arg Ala Gln Arg Arg Ile Ala Arg Ile Gln Gln Ile
 210 215 220

Glu Lys Asp Ile Leu Arg Ile Arg Gln Leu Leu Gln Ser Gln Ala Thr
 225 230 235 240

Glu Ala Glu Arg Ser Ser Gln Asn Lys His Glu Thr Gly Ser His Asp
 245 250 255

Ala Glu Arg Gln Asn Glu Gly Gln Gly Val Gly Glu Ile Asn Met Ala
260 265 270

Thr Ser Gly Asn Gly Gln Gly Ser Thr Thr Arg Met Asp His Glu Thr
275 280 285

Ala Ser Val Leu Ser Ser Ser Ser Thr His Ser Ala Pro Arg Arg Leu
290 295 300

Thr Ser His Leu Gly Thr Lys Val Glu Met Val Tyr Ser Leu Leu Ser
305 310 315 320

Met Leu Gly Thr His Asp Lys Asp Asp Met Ser Arg Thr Leu Leu Ala
325 330 335

Met Ser Ser Ser Gln Asp Ser Cys Ile Ser Met Arg Gln Ser Gly Cys
340 345 350

Leu Pro Leu Leu Ile Gln Leu Leu His Gly Asn Asp Lys Asp Ser Val
355 360 365

Leu Leu Gly Asn Ser Arg Gly Ser Lys Glu Ala Arg Ala Arg Ala Ser
370 375 380

Ala Ala Leu His Asn Ile Ile His Ser Gln Pro Asp Asp Lys Arg Gly
385 390 395 400

Arg Arg Glu Ile Arg Val Leu His Leu Leu Glu Gln Ile Arg Ala Tyr
405 410 415

Cys Glu Thr Cys Trp Glu Trp Gln Glu Ala His Glu Pro Gly Met Asp
420 425 430

Gln Asp Lys Asn Pro Met Pro Ala Pro Val Glu His Gln Ile Cys Pro
435 440 445

Ala Val Cys Val Leu Met Lys Leu Ser Phe Asp Glu Glu His Arg His
450 455 460

Ala Met Asn Glu Leu Gly Gly Leu Gln Ala Ile Ala Glu Leu Leu Gln
465 470 475 480

Val Asp Cys Glu Met Tyr Gly Leu Thr Asn Asp His Tyr Ser Ile Thr
485 490 495

Leu Arg Arg Tyr Ala Gly Met Ala Leu Thr Asn Leu Thr Phe Gly Asp
51

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Val	Ala	Asn	Lys	Ala	Thr	Leu	Cys	Ser	Met	Lys	Gly	Cys	Met	Arg	Ala
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Leu	Val	Ala	Gln	Leu	Lys	Ser	Glu	Ser	Glu	Asp	Leu	Gln	Gln	Val	Ile
	530					535					540				
Ala	Ser	Val	Leu	Arg	Asn	Leu	Ser	Trp	Arg	Ala	Asp	Val	Asn	Ser	Lys
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Lys	Thr	Leu	Arg	Glu	Val	Gly	Ser	Val	Lys	Ala	Leu	Met	Glu	Cys	Ala
				565					570					575	
Leu	Glu	Val	Lys	Lys	Glu	Ser	Thr	Leu	Lys	Ser	Val	Leu	Ser	Ala	Leu
			580					585					590		
Trp	Asn	Leu	Ser	Ala	His	Cys	Thr	Glu	Asn	Lys	Ala	Asp	Ile	Cys	Ala
	595						600					605			
Val	Asp	Gly	Ala	Leu	Ala	Phe	Leu	Val	Gly	Thr	Leu	Thr	Tyr	Arg	Ser
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Gln	Thr	Asn	Thr	Leu	Ala	Ile	Ile	Glu	Ser	Gly	Gly	Gly	Ile	Leu	Arg
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Asn	Val	Ser	Ser	Leu	Ile	Ala	Thr	Asn	Glu	Asp	His	Arg	Gln	Ile	Leu
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Arg	Glu	Asn	Asn	Cys	Leu	Gln	Thr	Leu	Leu	Gln	His	Leu	Lys	Ser	His
			660					665					670		
Ser	Leu	Thr	Ile	Val	Ser	Asn	Ala	Cys	Gly	Thr	Leu	Trp	Asn	Leu	Ser
		675					680					685			
Ala	Arg	Asn	Pro	Lys	Asp	Gln	Glu	Ala	Leu	Trp	Asp	Met	Gly	Ala	Val
	690					695					700				
Ser	Met	Leu	Lys	Asn	Leu	Ile	His	Ser	Lys	His	Lys	Met	Ile	Ala	Met
705					710					715					720
Gly	Ser	Ala	Ala	Ala	Leu	Arg	Asn	Leu	Met	Ala	Asn	Arg	Pro	Ala	Lys
				725					730					735	
Tyr	Lys	Asp	Ala	Asn	Ile	Met	Ser	Pro	Gly	Ser	Ser	Leu	Pro	Ser	Leu
			740					745					750		

His Val Arg Lys Gln Lys Ala Leu Glu Ala Glu Leu Asp Ala Gln His
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Leu Ser Glu Thr Phe Asp Asn Ile Asp Asn Leu Ser Pro Lys Ala Ser
 770 775 780

His Arg Ser Lys Gln Arg His Lys Gln Ser Leu Tyr Gly Asp Tyr Val
 785 790 795 800

Phe Asp Thr Asn Arg His Asp Asp Asn Arg Ser Asp Asn Phe Asn Thr
 805 810 815

Gly Asn Met Thr Val Leu Ser Pro Tyr Leu Asn Thr Thr Val Leu Pro
 820 825 830

Ser Ser Ser Ser Ser Arg Gly Ser Leu Asp Ser Ser Arg Ser Glu Lys
 835 840 845

Asp Arg Ser Leu Glu Arg Glu Arg Gly Ile Gly Leu Gly Asn Tyr His
 850 855 860

Pro Ala Thr Glu Asn Pro Gly Thr Ser Ser Lys Arg Gly Leu Gln Ile
 865 870 875 880

Ser Thr Thr Ala Ala Gln Ile Ala Lys Val Met Glu Glu Val Ser Ala
 885 890 895

Ile His Thr Ser Gln Glu Asp Arg Ser Ser Gly Ser Thr Thr Glu Leu
 900 905 910

His Cys Val Thr Asp Glu Arg Asn Ala Leu Arg Arg Ser Ser Ala Ala
 915 920 925

His Thr His Ser Asn Thr Tyr Asn Phe Thr Lys Ser Glu Asn Ser Asn
 930 935 940

Arg Thr Cys Ser Met Pro Tyr Ala Lys Leu Glu Tyr Lys Arg Ser Ser
 945 950 955 960

Asn Asp Ser Leu Asn Ser Val Ser Ser Ser Asp Gly Tyr Gly Lys Arg
 965 970 975

Gly Gln Met Lys Pro Ser Ile Glu Ser Tyr Ser Glu Asp Asp Glu Ser
 980 985 990

Lys Phe Cys Ser Tyr Gly Gln Tyr Pro Ala Asp Leu Ala His Lys Ile
 995 1000 1005

His Ser Ala Asn His Met Asp Asp Asn Asp Gly Glu Leu Asp Thr
 1010 1015 1020

Pro Ile Asn Tyr Ser Leu Lys Tyr Ser Asp Glu Gln Leu Asn Ser
 1025 1030 1035

Gly Arg Gln Ser Pro Ser Gln Asn Glu Arg Trp Ala Arg Pro Lys
 1040 1045 1050

His Ile Ile Glu Asp Glu Ile Lys Gln Ser Glu Gln Arg Gln Ser
 1055 1060 1065

Arg Asn Gln Ser Thr Thr Tyr Pro Val Tyr Thr Glu Ser Thr Asp
 1070 1075 1080

Asp Lys His Leu Lys Phe Gln Pro His Phe Gly Gln Gln Glu Cys
 1085 1090 1095

Val Ser Pro Tyr Arg Ser Arg Gly Ala Asn Gly Ser Glu Thr Asn
 1100 1105 1110

Arg Val Gly Ser Asn His Gly Ile Asn Gln Asn Val Ser Gln Ser
 1115 1120 1125

Leu Cys Gln Glu Asp Asp Tyr Glu Asp Asp Lys Pro Thr Asn Tyr
 1130 1135 1140

Ser Glu Arg Tyr Ser Glu Glu Glu Gln His Glu Glu Glu Glu Arg
 1145 1150 1155

Pro Thr Asn Tyr Ser Ile Lys Tyr Asn Glu Glu Lys Arg His Val
 1160 1165 1170

Asp Gln Pro Ile Asp Tyr Ser Leu Lys Tyr Ala Thr Asp Ile Pro
 1175 1180 1185

Ser Ser Gln Lys Gln Ser Phe Ser Phe Ser Lys Ser Ser Ser Gly
 1190 1195 1200

Gln Ser Ser Lys Thr Glu His Met Ser Ser Ser Ser Glu Asn Thr
 1205 1210 1215

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Ser	Ser	Ala	Gln	Ser	Arg	Ser	Gly	Gln	Pro	Gln	Lys	Ala	Ala	Thr
1235						1240					1245			
Cys	Lys	Val	Ser	Ser	Ile	Asn	Gln	Glu	Thr	Ile	Gln	Thr	Tyr	Cys
1250						1255					1260			
Val	Glu	Asp	Thr	Pro	Ile	Cys	Phe	Ser	Arg	Cys	Ser	Ser	Leu	Ser
1265						1270					1275			
Ser	Leu	Ser	Ser	Ala	Glu	Asp	Glu	Ile	Gly	Cys	Asn	Gln	Thr	Thr
1280						1285					1290			
Gln	Glu	Ala	Asp	Ser	Ala	Asn	Thr	Leu	Gln	Ile	Ala	Glu	Ile	Lys
1295						1300					1305			
Glu	Lys	Ile	Gly	Thr	Arg	Ser	Ala	Glu	Asp	Pro	Val	Ser	Glu	Val
1310						1315					1320			
Pro	Ala	Val	Ser	Gln	His	Pro	Arg	Thr	Lys	Ser	Ser	Arg	Leu	Gln
1325						1330					1335			
Gly	Ser	Ser	Leu	Ser	Ser	Glu	Ser	Ala	Arg	His	Lys	Ala	Val	Glu
1340						1345					1350			
Phe	Ser	Ser	Gly	Ala	Lys	Ser	Pro	Ser	Lys	Ser	Gly	Ala	Gln	Thr
1355						1360					1365			
Pro	Lys	Ser	Pro	Pro	Glu	His	Tyr	Val	Gln	Glu	Thr	Pro	Leu	Met
1370						1375					1380			
Phe	Ser	Arg	Cys	Thr	Ser	Val	Ser	Ser	Leu	Asp	Ser	Phe	Glu	Ser
1385						1390					1395			
Arg	Ser	Ile	Ala	Ser	Ser	Val	Gln	Ser	Glu	Pro	Cys	Ser	Gly	Met
1400						1405					1410			
Val	Ser	Gly	Ile	Ile	Ser	Pro	Ser	Asp	Leu	Pro	Asp	Ser	Pro	Gly
1415						1420					1425			
Gln	Thr	Met	Pro	Pro	Ser	Arg	Ser	Lys	Thr	Pro	Pro	Pro	Pro	Pro
1430						1435					1440			
Gln	Thr	Ala	Gln	Thr	Lys	Arg	Glu	Val	Pro	Lys	Asn	Lys	Ala	Pro

1445		1450		1455
Thr Ala Glu Lys Arg Glu Ser Gly Pro Lys Gln Ala Ala Val Asn				
1460		1465		1470
Ala Ala Val Gln Arg Val Gln Val Leu Pro Asp Ala Asp Thr Leu				
1475		1480		1485
Leu His Phe Ala Thr Glu Ser Thr Pro Asp Gly Phe Ser Cys Ser				
1490		1495		1500
Ser Ser Leu Ser Ala Leu Ser Leu Asp Glu Pro Phe Ile Gln Lys				
1505		1510		1515
Asp Val Glu Leu Arg Ile Met Pro Pro Val Gln Glu Asn Asp Asn				
1520		1525		1530
Gly Asn Glu Thr Glu Ser Glu Gln Pro Lys Glu Ser Asn Glu Asn				
1535		1540		1545
Gln Glu Lys Glu Ala Glu Lys Thr Ile Asp Ser Glu Lys Asp Leu				
1550		1555		1560
Leu Asp Asp Ser Asp Asp Asp Asp Ile Glu Ile Leu Glu Glu Cys				
1565		1570		1575
Ile Ile Ser Ala Met Pro Thr Lys Ser Ser Arg Lys Ala Lys Lys				
1580		1585		1590
Pro Ala Gln Thr Ala Ser Lys Leu Pro Pro Pro Val Ala Arg Lys				
1595		1600		1605
Pro Ser Gln Leu Pro Val Tyr Lys Leu Leu Pro Ser Gln Asn Arg				
1610		1615		1620
Leu Gln Pro Gln Lys His Val Ser Phe Thr Pro Gly Asp Asp Met				
1625		1630		1635
Pro Arg Val Tyr Cys Val Glu Gly Thr Pro Ile Asn Phe Ser Thr				
1640		1645		1650
Ala Thr Ser Leu Ser Asp Leu Thr Ile Glu Ser Pro Pro Asn Glu				
1655		1660		1665
Leu Ala Ala Gly Glu Gly Val Arg Gly Gly Ala Gln Ser Gly Glu				
1670		1675		1680

Phe	Glu	Lys	Arg	Asp	Thr	Ile	Pro	Thr	Glu	Gly	Arg	Ser	Thr	Asp
1685						1690					1695			
Glu	Ala	Gln	Gly	Gly	Lys	Thr	Ser	Ser	Val	Thr	Ile	Pro	Glu	Leu
1700						1705					1710			
Asp	Asp	Asn	Lys	Ala	Glu	Glu	Gly	Asp	Ile	Leu	Ala	Glu	Cys	Ile
1715						1720					1725			
Asn	Ser	Ala	Met	Pro	Lys	Gly	Lys	Ser	His	Lys	Pro	Phe	Arg	Val
1730						1735					1740			
Lys	Lys	Ile	Met	Asp	Gln	Val	Gln	Gln	Ala	Ser	Ala	Ser	Ser	Ser
1745						1750					1755			
Ala	Pro	Asn	Lys	Asn	Gln	Leu	Asp	Gly	Lys	Lys	Lys	Lys	Pro	Thr
1760						1765					1770			
Ser	Pro	Val	Lys	Pro	Ile	Pro	Gln	Asn	Thr	Glu	Tyr	Arg	Thr	Arg
1775						1780					1785			
Val	Arg	Lys	Asn	Ala	Asp	Ser	Lys	Asn	Asn	Leu	Asn	Ala	Glu	Arg
1790						1795					1800			
Val	Phe	Ser	Asp	Asn	Lys	Asp	Ser	Lys	Lys	Gln	Asn	Leu	Lys	Asn
1805						1810					1815			
Asn	Ser	Lys	Asp	Phe	Asn	Asp	Lys	Leu	Pro	Asn	Asn	Glu	Asp	Arg
1820						1825					1830			
Val	Arg	Gly	Ser	Phe	Ala	Phe	Asp	Ser	Pro	His	His	Tyr	Thr	Pro
1835						1840					1845			
Ile	Glu	Gly	Thr	Pro	Tyr	Cys	Phe	Ser	Arg	Asn	Asp	Ser	Leu	Ser
1850						1855					1860			
Ser	Leu	Asp	Phe	Asp	Asp	Asp	Asp	Val	Asp	Leu	Ser	Arg	Glu	Lys
1865						1870					1875			
Ala	Glu	Leu	Arg	Lys	Ala	Lys	Glu	Asn	Lys	Glu	Ser	Glu	Ala	Lys
1880						1885					1890			
Val	Thr	Ser	His	Thr	Glu	Leu	Thr	Ser	Asn	Gln	Gln	Ser	Ala	Asn
1895						1900					1905			

Lys Thr Gln Ala Ile Ala Lys Gln Pro Ile Asn Arg Gly Gln Pro 1910 1915 1920
Lys Pro Ile Leu Gln Lys Gln Ser Thr Phe Pro Gln Ser Ser Lys 1925 1930 1935
Asp Ile Pro Asp Arg Gly Ala Ala Thr Asp Glu Lys Leu Gln Asn 1940 1945 1950
Phe Ala Ile Glu Asn Thr Pro Val Cys Phe Ser His Asn Ser Ser 1955 1960 1965
Leu Ser Ser Leu Ser Asp Ile Asp Gln Glu Asn Asn Asn Lys Glu 1970 1975 1980
Asn Glu Pro Ile Lys Glu Thr Glu Pro Pro Asp Ser Gln Gly Glu 1985 1990 1995
Pro Ser Lys Pro Gln Ala Ser Gly Tyr Ala Pro Lys Ser Phe His 2000 2005 2010
Val Glu Asp Thr Pro Val Cys Phe Ser Arg Asn Ser Ser Leu Ser 2015 2020 2025
Ser Leu Ser Ile Asp Ser Glu Asp Asp Leu Leu Gln Glu Cys Ile 2030 2035 2040
Ser Ser Ala Met Pro Lys Lys Lys Lys Pro Ser Arg Leu Lys Gly 2045 2050 2055
Asp Asn Glu Lys His Ser Pro Arg Asn Met Gly Gly Ile Leu Gly 2060 2065 2070
Glu Asp Leu Thr Leu Asp Leu Lys Asp Ile Gln Arg Pro Asp Ser 2075 2080 2085
Glu His Gly Leu Ser Pro Asp Ser Glu Asn Phe Asp Trp Lys Ala 2090 2095 2100
Ile Gln Glu Gly Ala Asn Ser Ile Val Ser Ser Leu His Gln Ala 2105 2110 2115
Ala Ala Ala Ala Cys Leu Ser Arg Gln Ala Ser Ser Asp Ser Asp 2120 2125 2130

Ser	Ile	Leu	Ser	Leu	Lys	Ser	Gly	Ile	Ser	Leu	Gly	Ser	Pro	Phe
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His	Leu	Thr	Pro	Asp	Gln	Glu	Glu	Lys	Pro	Phe	Thr	Ser	Asn	Lys
2150						2155					2160			
Gly	Pro	Arg	Ile	Leu	Lys	Pro	Gly	Glu	Lys	Ser	Thr	Leu	Glu	Thr
2165						2170					2175			
Lys	Lys	Ile	Glu	Ser	Glu	Ser	Lys	Gly	Ile	Lys	Gly	Gly	Lys	Lys
2180						2185					2190			
Val	Tyr	Lys	Ser	Leu	Ile	Thr	Gly	Lys	Val	Arg	Ser	Asn	Ser	Glu
2195						2200					2205			
Ile	Ser	Gly	Gln	Met	Lys	Gln	Pro	Leu	Gln	Ala	Asn	Met	Pro	Ser
2210						2215					2220			
Ile	Ser	Arg	Gly	Arg	Thr	Met	Ile	His	Ile	Pro	Gly	Val	Arg	Asn
2225						2230					2235			
Ser	Ser	Ser	Ser	Thr	Ser	Pro	Val	Ser	Lys	Lys	Gly	Pro	Pro	Leu
2240						2245					2250			
Lys	Thr	Pro	Ala	Ser	Lys	Ser	Pro	Ser	Glu	Gly	Gln	Thr	Ala	Thr
2255						2260					2265			
Thr	Ser	Pro	Arg	Gly	Ala	Lys	Pro	Ser	Val	Lys	Ser	Glu	Leu	Ser
2270						2275					2280			
Pro	Val	Ala	Arg	Gln	Thr	Ser	Gln	Ile	Gly	Gly	Ser	Ser	Lys	Ala
2285						2290					2295			
Pro	Ser	Arg	Ser	Gly	Ser	Arg	Asp	Ser	Thr	Pro	Ser	Arg	Pro	Ala
2300						2305					2310			
Gln	Gln	Pro	Leu	Ser	Arg	Pro	Ile	Gln	Ser	Pro	Gly	Arg	Asn	Ser
2315						2320					2325			
Ile	Ser	Pro	Gly	Arg	Asn	Gly	Ile	Ser	Pro	Pro	Asn	Lys	Leu	Ser
2330						2335					2340			
Gln	Leu	Pro	Arg	Thr	Ser	Ser	Pro	Ser	Thr	Ala	Ser	Thr	Lys	Ser
2345						2350					2355			
Ser	Gly	Ser	Gly	Lys	Met	Ser	Tyr	Thr	Ser	Pro	Gly	Arg	Gln	Met

2360		2365		2370
Ser Gln Gln Asn Leu Thr	Lys Gln Thr Gly Leu	Ser Lys Asn Ala		
2375	2380	2385		
Ser Ser Ile Pro Arg Ser	Glu Ser Ala Ser Lys	Gly Leu Asn Gln		
2390	2395	2400		
Met Asn Asn Gly Asn Gly	Ala Asn Lys Lys Val	Glu Leu Ser Arg		
2405	2410	2415		
Met Ser Ser Thr Lys Ser	Ser Gly Ser Glu Ser	Asp Arg Ser Glu		
2420	2425	2430		
Arg Pro Val Leu Val Arg	Gln Ser Thr Phe Ile	Lys Glu Ala Pro		
2435	2440	2445		
Ser Pro Thr Leu Arg Arg	Lys Leu Glu Glu Ser	Ala Ser Phe Glu		
2450	2455	2460		
Ser Leu Ser Pro Ser Ser	Arg Pro Ala Ser Pro	Thr Arg Ser Gln		
2465	2470	2475		
Ala Gln Thr Pro Val Leu	Ser Pro Ser Leu Pro	Asp Met Ser Leu		
2480	2485	2490		
Ser Thr His Ser Ser Val	Gln Ala Gly Gly Trp	Arg Lys Leu Pro		
2495	2500	2505		
Pro Asn Leu Ser Pro Thr	Ile Glu Tyr Asn Asp	Gly Arg Pro Ala		
2510	2515	2520		
Lys Arg His Asp Ile Ala	Arg Ser His Ser Glu	Ser Pro Ser Arg		
2525	2530	2535		
Leu Pro Ile Asn Arg Ser	Gly Thr Trp Lys Arg	Glu His Ser Lys		
2540	2545	2550		
His Ser Ser Ser Leu Pro	Arg Val Ser Thr Trp	Arg Arg Thr Gly		
2555	2560	2565		
Ser Ser Ser Ser Ile Leu	Ser Ala Ser Ser Glu	Ser Ser Glu Lys		
2570	2575	2580		
Ala Lys Ser Glu Asp Glu	Lys His Val Asn Ser	Ile Ser Gly Thr		
2585	2590	2595		

Lys	Gln	Ser	Lys	Glu	Asn	Gln	Val	Ser	Ala	Lys	Gly	Thr	Trp	Arg
2600						2605					2610			
Lys	Ile	Lys	Glu	Asn	Glu	Phe	Ser	Pro	Thr	Asn	Ser	Thr	Ser	Gln
2615						2620					2625			
Thr	Val	Ser	Ser	Gly	Ala	Thr	Asn	Gly	Ala	Glu	Ser	Lys	Thr	Leu
2630						2635					2640			
Ile	Tyr	Gln	Met	Ala	Pro	Ala	Val	Ser	Lys	Thr	Glu	Asp	Val	Trp
2645						2650					2655			
Val	Arg	Ile	Glu	Asp	Cys	Pro	Ile	Asn	Asn	Pro	Arg	Ser	Gly	Arg
2660						2665					2670			
Ser	Pro	Thr	Gly	Asn	Thr	Pro	Pro	Val	Ile	Asp	Ser	Val	Ser	Glu
2675						2680					2685			
Lys	Ala	Asn	Pro	Asn	Ile	Lys	Asp	Ser	Lys	Asp	Asn	Gln	Ala	Lys
2690						2695					2700			
Gln	Asn	Val	Gly	Asn	Gly	Ser	Val	Pro	Met	Arg	Thr	Val	Gly	Leu
2705						2710					2715			
Glu	Asn	Arg	Leu	Asn	Ser	Phe	Ile	Gln	Val	Asp	Ala	Pro	Asp	Gln
2720						2725					2730			
Lys	Gly	Thr	Glu	Ile	Lys	Pro	Gly	Gln	Asn	Asn	Pro	Val	Pro	Val
2735						2740					2745			
Ser	Glu	Thr	Asn	Glu	Ser	Ser	Ile	Val	Glu	Arg	Thr	Pro	Phe	Ser
2750						2755					2760			
Ser	Ser	Ser	Ser	Ser	Lys	His	Ser	Ser	Pro	Ser	Gly	Thr	Val	Ala
2765						2770					2775			
Ala	Arg	Val	Thr	Pro	Phe	Asn	Tyr	Asn	Pro	Ser	Pro	Arg	Lys	Ser
2780						2785					2790			
Ser	Ala	Asp	Ser	Thr	Ser	Ala	Arg	Pro	Ser	Gln	Ile	Pro	Thr	Pro
2795						2800					2805			
Val	Asn	Asn	Asn	Thr	Lys	Lys	Arg	Asp	Ser	Lys	Thr	Asp	Ser	Thr
2810						2815					2820			

Glu Ser Ser Gly Thr Gln Ser Pro Lys Arg His Ser Gly Ser Tyr
 2825 2830 2835

Leu Val Thr Ser Val
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<220>
 <223> MCC probe/primer

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<210> 12
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 <212> DNA
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<220>
 <223> MCC probe/primer

<400> 12
 ctccgccgct gccgcagctg c 21

<210> 13
 <211> 22
 <212> DNA
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<220>
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<400> 13
 caggaggctc ggtggcgcg cg 22

<210> 14
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 <212> DNA
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<220>
 <223> MCC probe/primer

<400> 14
 ctccgccgct gccgcagctg 20

<210> 15
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 <212> DNA
 <213> Artificial sequence

<220>
 <223> MCC probe/primer

 <400> 15
 cgcgccgcgc caccgagcc 19

 <210> 16
 <211> 22
 <212> DNA
 <213> Artificial sequence

 <220>
 <223> MCC probe/primer

 <400> 16
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 <210> 17
 <211> 595
 <212> DNA
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 <220>
 <223> bisulphite-treated methylated MCC gene promoter

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 ttttggaatt cgaggcgcgg atttttttcg ttttatcggt ttagtttttt cgaggagttcg 180
 tcggtgtttt ttagggtgtc ggttcgtggt gggaagtgtt ttttattttg gtaatggggg 240
 gcggcgaggc accgtaggag tggcgaggcg gcgcccaggg tggattgtt tcggaacggg 300
 gcgttggggtg cgcgcgggag ggttttcgcg cgggtttcgt cgttgtcgta gttgcgagcg 360
 cgtcgcgtta tcgagttttt tgtagtaatg gttcgttcgt gaaacgcgag ttacggttgt 420
 tttttttaag agtgtttgta tttttcgttt gcgtttcgta attgttttgg gtgaaaatgg 480
 ttgttttagat taaaatgtgg tagaagggat taagtagtgg atattgagtt tgtgaagttt 540
 aatttttaag ttttgagatt tgggggattg agagttagt tttgaaaagt gtatt 595

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 <213> Artificial sequence

 <220>
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 <400> 18
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<210> 19
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 <220>
 <223> methylated sequence-specific MCC probe/primer

 <400> 19
 tttcgtcgtt gtcgtagttg c 21

 <210> 20
 <211> 22
 <212> DNA
 <213> Artificial sequence

 <220>
 <223> methylated sequence-specific MCC probe/primer

 <400> 20
 caaaaaactc gataacgcga cg 22

 <210> 21
 <211> 20
 <212> DNA
 <213> Artificial sequence

 <220>
 <223> methylated sequence-specific MCC probe/primer

 <400> 21
 tttcgtcgtt gtcgtagttg 20

 <210> 22
 <211> 19
 <212> DNA
 <213> Artificial sequence

 <220>
 <223> methylated sequence-specific MCC probe/primer

 <400> 22
 cgcgtcgcgt tatcgagtt 19

 <210> 23
 <211> 21
 <212> DNA
 <213> Artificial sequence

 <220>
 <223> methylated sequence-specific MCC probe/primer

 <400> 23
 ttcacgaacg aaccattact a 21

<210> 24
 <211> 595
 <212> DNA
 <213> Artificial sequence

 <220>
 <223> bisulphite-treated MCC promoter from healthy control

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 aaggggaaat tttggtgtga agtgtagttt tgttttggtt ttttttagtt tttttttttt 120
 ttttggaatt tgagggtgtg attttttttg ttttattgtt ttagtttttt tgggagtttg 180
 ttggtgtttt ttagggtgtt ggtttgtgtt gggaagtgtt ttttattttg gtaatggggg 240
 gcggcgaggc accgtaggag tggcgaggcg gcgccagggt tggattgtt ttggaatggg 300
 gtgttggttg tgtgtgggag ggttttcgtg tgggttttgt tgttggtgta gttgtgagt 360
 tgttggttta ttgagttttt tgtagtaatg gtttgttgtt gaaatgtgag ttatgggtgt 420
 tttttttaag agtgtttgta tttttgttt gtgttttgta attgttttggt gtgaaaatgg 480
 ttgttttagat taaaatgtgg tagaagggat taagtagtgg atattgagtt tgtgaagttt 540
 aatttttaag ttttgagatt tgggggattg agagttagt tttgaaaagt gtatt 595

<210> 25
 <211> 21
 <212> DNA
 <213> Artificial sequence

 <220>
 <223> non-methylated sequence-specific MCC probe/primer

 <400> 25
 tattgttttg gaatggggtg t 21

<210> 26
 <211> 21
 <212> DNA
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 <400> 26
 ttttggtgtt gttgtagttg t 21

<210> 27
 <211> 22
 <212> DNA
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<400> 27
 caaaaaactc aataacacaa ca 22

<210> 28
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 <212> DNA
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<220>
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<400> 28
 ttttggtggt gttgtagttg 20

<210> 29
 <211> 19
 <212> DNA
 <213> Artificial sequence

<220>
 <223> non-methylated sequence-specific MCC probe/primer

<400> 29
 tgtgttgtgt tattgagtt 19

<210> 30
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 <212> DNA
 <213> Artificial sequence

<220>
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<400> 30
 ttcacaaaca aaccattact a 21

<210> 31
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 <212> DNA
 <213> Artificial sequence

<220>
 <223> sequencing primer MCC-promF

<400> 31
 ggtagtagt tagatagttg t 21

<210> 32
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 <212> DNA
 <213> Artificial sequence

<220>
 <223> sequencing primer MCC-promR

<400> 32
 tacttaatcc cttctaccac 20

<210> 33
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 <212> DNA
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<220>
 <223> primer MCC-cDNAF1

<400> 33
 ctgggtgaaa atggctgtct 20

<210> 34
 <211> 20
 <212> DNA
 <213> Artificial sequence

<220>
 <223> primer MCC-cDNAR1

<400> 34
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<210> 35
 <211> 24
 <212> DNA
 <213> Artificial sequence

<220>
 <223> methylated p16 primer

<400> 35
 ttattagagg gtggggcgga tcgc 24

<210> 36
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 <212> DNA
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<220>
 <223> methylated 16 primer

<400> 36
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<210> 37
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 <212> DNA
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<400> 37

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<400> 42	
taatctatcg ccgcctcatc g	21

<210> 43
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 <213> Artificial sequence

 <220>
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 <400> 43
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 <210> 44
 <211> 24
 <212> DNA
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 <220>
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 <400> 44
 cgaacgcgac gtcaaacgcc acta 24

 <210> 45
 <211> 23
 <212> DNA
 <213> Artificial sequence

 <220>
 <223> methylated MGMT primer

 <400> 45
 tttcgacggt cgtagggttt cgc 23

 <210> 46
 <211> 22
 <212> DNA
 <213> Artificial sequence

 <220>
 <223> methylated MGMT primer

 <400> 46
 gcactcttcc gaaaacgaaa cg 22